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Editorial

This editorial focuses on qualitative research, often mistakenly considered less scientific than quantitative research, in that it is "research without statistics".

The qualitative research aims to understand the phenomena from the subject's point of view (emic approach), to identify the uniqueness of the cases (ideographic method), and enhance the interaction between researchers and participants (dialogic and transformative approach). The approach to the person is holistic and global, and the reference paradigm is perceptive and inductive, typical of critical theories and constructionism. Qualitative research allows us to detect: 1) the subjective meanings that individuals attribute to their activities and life contexts; 2) the belief systems shared by the members of a culture; 3) the way in which people act in a social reality and build it through language and conversation. In all cases the analysis makes use of verbal codes transformed in written texts. Therefore, the qualitative research consists of a corpus of dialogic or observed material that is subjected to rigorous, long and costly data analysis procedures. It requires a great interpretative effort, in which the influence of the interviewer is quite high. The privileged instruments are the *qualitative interview, the patient's agenda, the focus groups and the observation*.

The ***qualitative interview*** offers completeness in the provided answers, flexibility in data collection and a setting suitable for the survey. The interviewers can request answers, ask for clarifications, remove misunderstandings and obtain a high response rate.

The interview can be: 1) *structured*, in which the questions, the order and their sequence are predefined and placed in the same way; 2) *semi-structured*, in which the questions are predefined on the basis of a guide, even if the order of presentation and the formulation of the questions may vary; 3) flexible structure, in which, if a specific topic of interest is predefined, the questions may also arise in the course of the interview, even starting from interventions by the interviewee. Therefore, the predefined fields are only a topic guide, to be used flexibly. In particular, in this issue, we will specifically examine the **narrative interview**, of which examples of application will be provided. It is often used to "understand" the patient's illness experience, placing it in its overall history. Therefore, the narrative interview makes the participant the expert and the protagonist of the interview.

Another qualitative instrument is the ***patient's agenda***, a "personal agenda" that the patient brings with him. It concerns the ways in which the patient experiences his illness and allows accommodating the needs of the patient when he meets the professional. The agenda: is based on communication; it is born in the relationship and indicates the experiential, cognitive and emotional baggage that the patient carries with him. It is divided into four functional areas: 1) *feelings* (e.g. fear, anxiety, guilt), which concern previous events and the subjective expression of how the person suffers; 2) *ideas and beliefs*: the personal interpretations of the disease are articulated to generate a more complex construction of beliefs or frames; 3) *expectations and desires*, which concern the requests for help, more or less explicit, and the ways in which to implement it; 4) *context*, which concerns the way in which the patient lives and interacts with his family, and in the social, work-related and cultural environment. The meeting between the patient's agenda and the professional's agenda (which includes the knowledge inherent to

pathologies, diagnosis, prognosis, and therapies) allows building an advantageous relationship in the care pathways, in which the trust and the "therapeutic alliance" are built.

Focus groups are very popular in socio-health research. They are based on the group discussion and focused on a specific topic that the researcher wants to investigate in depth. It foresees the presence of a conductor and an observer, has a duration of about 1 and a half hour to 2 hours, and involves about 8-12 participants. It is divided into: 1) *self-managed* focus (lower structuring level): the moderator proposes the topic of discussion and some interaction rules and leaves the interaction free; 2) *semi-structured* focus: the moderator uses an interview guide or grid (list of topics to be discussed) to trigger a group discussion; 3) *structured* focus: use of standardized techniques to collect additional data or encourage discussion (e.g. questionnaires, brainstorming, role-playing). Focus groups help people to explore and clarify their opinions on an area of interest in a simple and in-depth manner in a permissive and non-threatening environment. They are characterized by the interaction that is created between the participants and is oriented to understand the process of co-construction of the meanings and the rules that underlie the assessments produced by the group. They not only collect opinions, but also the ways in which opinions are formed, something which make them useful in the preliminary or exploratory phases of research, or as a qualitative study at the end of a quantitative research.

Finally, ***observation*** consists in the description as broad and faithful as possible of the characteristics of an event, behavior or situation, and the conditions in which it occurs. The observation adopts an intentional, focused, active and selective look. It is a planned method of collecting data that defines precisely who, when, how and where to observe, based on precise and circumscribed objectives. Observation tends to focus on what the researcher considers most relevant and diversifies according to the way in which the observer behaves and acts. The observation may be: *participant*, when the observer participates directly in the observed phenomenon becoming part of the situation; *detached*, when the observer occupies an external position, adopting a silent and discreet approach; *invoked*, if the observer does not intervene directly on the phenomenon; provoked, if the object of observation is the result of some manipulation of reality carried out by the observer; *indirect* and conducted under controlled conditions; *direct* or naturalistic, if it provides for the study of the phenomena that occur in real life situations.

Giovanna Artioli, Chiara Foà, Leopoldo Sarli

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The narrative interview for the assessment of the assisted person: structure, method and data analysis

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Abstract. *Background and aim:* If it is true that the impact of the symptoms of the disease is differently perceived by each person and that there is an incommunicability of the experiences of suffering, it is equally true that the narration provides an understandable representation, which derives from the network of representations that are part of a personal history. The aim of this study was to offer an in-depth analysis of the "narrative interview" collected during the assessment of a 74 years old diabetic woman. *Methods:* A case study was conducted by a nurse with advanced expertise in conducting narrative interview. Content analysis and Meaning analysis were performed using a Grounded theory approach and according with Gee's Poetic Method. *Results:* The patient after the diagnosis felt disbelief, anger and confusion. The illness forces her to change her life, habits and social role, with high suffering. However she adjusted to this new condition and thanks to her strong and positive attitude and the social support she received, she has succeeded in activating her "post traumatic growth". *Conclusions:* A good narrative interview starts long before the interview itself and it requires: a specific training in the use of the instrument; the strengthening of specific skills (e.g. the active listening); the choice of optimal setting and timing for the patient; the ability to offer encouragement in the expression of the subjective experience and to conduct an analysis of the patient's words with a subjective lens, reflecting the uniqueness of each illness experience. (www.actabiomedica.it)

Key words: narrative interview, assessment, diabetes, nursing, method, meaning and content analysis

1. Introduction

In this article we will try to highlight the importance of the narrative interview in the social-health field, the basic pre-requisites and skills required to conduct a narrative interview aimed at identifying the main problems and needs of the sick person, how the narrative interview is structured, and how it can be analyzed. Through a case study, the concepts described will be exemplified.

1.1 The importance of the narrative interview in the social-health field

Rather than categorizing the data, observing them from an objective point of view and generalizing them with the risk of creating dogmas, the narrative approach recognizes human experiences as constantly changing dynamic entities (1).

For the authors, narrative interviews are a means of collecting people's stories about their health and illness experiences, and are useful in understanding individual life paths.

In the narrative interview, therefore, the interviewer submits questions to interpret and understand the participant's words rather than try to explain or predict those words (2).

Indeed, those who tell their health and illness story do so to convey a specific perspective of an event. In this perspective, narration is not only a communicative

method, but also a way of "perceiving" the world (3). "Stories make the implicit explicit, make visible what is hidden, give a form to what does not have it, clarify the confusion" (2).

Telling a story about his own illness, it means describing a series of events, consciously or unconsciously selected and putting them into connection. This "story telling" is rarely structured into a single plot, but often hesitantly organized, in a discontinuous and fragmented manner (4).

If it is true that the impact of the symptoms of the disease is perceived and dealt with differently for each person and if it is true that there is an incommunicability of the individual experiences of pain and suffering, it is equally true that the narration provides a culturally mediated and understandable representation, which derives from the complex network of representations and symbologies that are part of its history (5).

Then narratives "open the doors" to subjectivity and new meanings about situations and conditions experienced: the person who tells himself and talks about his experience takes on a central role in the process of care: he emerges and becomes an active part of the process (6).

The active involvement of the patient is also emphasized by De Vincentis and colleagues (7), who affirm the importance of a person-centered approach in the entire care path. In fact, their study showed that most patients considered positive and useful to express their experience and their expectations.

Therefore the narration encourages patients to see themselves at the center of their stories; it must be integrated to support and help the person to reformulate their thoughts, perspectives and sense of self. The opportunity for self-expression and reflection offered by narration can improve the quality of life, leading to clarity in the person: telling the experience and the history of illness helps to activate processes of re-construction of a new identity (8).

Within the phenomenological-hermeneutic approach to which narrative medicine (e.g. 6) and narrative nursing refer (e.g. 9), the narratives are linked to the singularity, to the particularity, to the temporality and to the contextuality of the stories, helping the professional to understand the illness and sickness experienced by the patient (10).

The goal of health professionals, according to this perspective, is to cure even when specific therapies no longer exist, ensuring that the patient does not remain in the solitude of his own suffering (11). The narrative interviews can therefore help professionals to better understand people's experiences and behaviors and get closer to represent the context and the integrity of people's lives compared to other quantitative means of research. This is precisely because narrative interviews are not concerned with the absolute truth of facts, but rather with the meaning of lived experiences.

For Egnew (12), especially for the person with chronic pathology, such as the oncological one, suffering becomes the central nucleus of the disease and is intended as an emotional perception of personal discomfort that aims to threaten the integrity of the self and of the whole experience of the person. The psychic pain that the disease brings sets in the individual a series of psychological responses that are reflected in the way in which he faces his own illness. In this context, thanks to the narrative interview, it is possible to lead the individual to the understanding and acceptance of his state.

The main objective of the narrative instrument is therefore the involvement of the person: through dialogue with the patient it is possible to open the way to inner reflection, with benefits on the acceptance of suffering. The patient, in fact, manages to find relief when he accepts his new condition. It is right to speak, in this sense, of the patient's holistic healing, meaning a sense of harmony, well-being, peace and balance, which go beyond mere physical integrity: to talk about oneself helps the person to rebuild the past, to distance oneself from suffering and to reaffirm the search for a new identity (12).

The oncological disease affects not only the body, but also the mind, as well as the whole system of social and family relationships.

This approach, based on the holistic understanding of the person, helps social and health professionals to understand patients and improve communication with the person being cared for; it also derives different ideas and insights that concern problems inherent to the management of certain diseases or situations (2).

In particular, the narrative allows to better understand the different assistance problems of the person

and his family (9), providing a targeted assessment (13), a thorough diagnosis (14) and a personalized education (15). With reference to this last aspect, the narrative, helping patients and family members to understand the disease, can improve adherence to treatment and self-efficacy in monitoring and managing the disease. It becomes an effective instrument for therapeutic education, helping the patient to cope with the difficulties of life (16).

In this work, specific reference will be made to the assessment, which is the first phase of nursing processes. The assessment includes data collection, problem identification, and setting of priorities, which facilitates the process of making a nursing diagnosis. The assessment helps identify a goal that orientates the planning as well as the nursing intervention, which will be evaluated at a later stage (13). As already illustrated in the Integrated Narrative Nursing Assessment (INNA) model, the concept of the assessment is not a collection of information and its transcription; it is rather a multidimensional process of thinking which requires specific skills. This is not only because of the interconnection of a plurality of dimensions it involves (e.g. biological, physiological, psychological, socio-cultural, spiritual), but also because of the multidisciplinary and multiprofessional expertise it employs, when possible (17).

1.2 The structure of the narrative interview

Despite being a qualitative methodology based on the study of the experience reported by the patient, the narrative interview is not unstructured or unorganized. It is based on ontological, epistemological and methodological assumptions.

In particular, Connelly & Clandinin (18, 19) identified three common elements of any narrative interview:

- temporality: any event has a past, a present and a future and it is important to understand the phenomena as processes, as a continuous transition over a period of time;
- sociality: concerns individual characteristics (feelings, hopes, desires) and social characteristics (surrounding factors, existential conditions, physical environment) that inevitably affect experiences and phenomena. In this regard, it is also important to consider the close relationship that is established between the participant and the professional;
- the place: the context (physical and topographical) in which the events take place. In the narrative investigation, the phenomenon cannot be de-contextualised since it has a high impact in determining the experience.

The authors define eight structural elements of the qualitative interview:

1. The justification: the reason why the study is important; in our case, the interview is aimed at providing extensive and in-depth information to better assist the sick person.

2. Giving a name to the phenomenon: what is being investigated; in our proposal, the real or potential problems of the sick person.

3. Considering and describe the particular methods used to study the phenomenon; in particular, we choose to use a narrative (unstructured) interview.

4. Describing the data analysis and interpretation process; in our case, the content analysis and the meaning analysis.

5. Providing the position of the study in relation to other research conducted on a particular phenomenon or conducted using a different ontological and epistemological assumption; we choose to deal with experiences in depth, compared to the "traditional" methods.

6. The uniqueness of the study: to offer a sense of what is possible to know about a phenomenon that cannot be known in the same way, from other theories, methods or lines of work; in our case, exploring, through a case study, a story of illness narrated in an intimate and personal way.

7. Ethical considerations; the interview takes place in the context of absolute freedom to accept, to refuse or to anytime interrupt the interview by the interviewee.

8. The process of representation and the type of text are to be considered for those engaged in narrative investigations; in our case, the professional try to remain as faithful as possible to the interpretation that the interviewee gives to his condition of illness.

1.3 Pre-requisites and skills for conducting the narrative interview in the social-health field

The first prerequisite required, before starting any narrative interview, is that patients must be fully informed of the purpose and objectives of the interview and must give their consent, even by signing a specific form.

In addition to these basic indications, some skills that help the professional to create a context of relationship and participation suitable for defining a proper evaluation of the assisted person's problems are required before giving a narrative interview - among the 23 needs of the assisted person identified by Artioli and collaborators (10). Thanks to the acquired narrative competence, the professional is able to understand the meanings that the patient attributes to his illness, to identify the priority of the needs, and their interconnections with other needs (13).

Who uses this methodology does not use a rigid scheme, but generally tends to follow the content and the rhythm proposed by the interviewee very carefully.

The listener has to follow the story through its narrative trajectories, to identify the metaphors and images (20), tolerating also the ambiguity and the uncertainty (21).

Some specific skills, among those who collect a narrative interview, help to understand the complexity of the person, what determines his manifestations, what his responses to internal and external changes are and where he is oriented. This allows us to deeply understand what he feels and lives, thus favoring personalized adaptation processes.

To effectively conduct a narrative interview it is necessary:

1. To know how to choose the right setting;
2. To know the basics of effective communication;
3. To use communication facilitation strategies;
4. To know how to formulate open questions;
5. To know how to put in place the active listening to the patient and his point of view;
6. The understanding of 'being' in a difficult relationship.

As already argued, the ability to make inferences and formulate forecasting assumptions requires not only adequate knowledge and basic nursing skills, but also the ability to use multidimensional thinking (13).

1.4 The narrative interview for the assessment of needs and problems of the sick person

Before conducting an interview, the professional must develop an interview guide to refer to during the meeting with the sick person.

In conducting the interview, it is advisable for the interviewer to refer to the questions presented in the guide set up beforehand. Nevertheless, it is important that the interview takes place in an environment based on non-judgmental listening and on mutual trust. For this reason, the questions can also be placed in a different order and, in any case, they must be used as much as possible starting from what is freely expressed by the interviewee on a verbal and non-verbal way. For the same reason, questions may from time to time be changed and reformulated based on what happens during the communication relationship.

Finally, at the end of the interview, it's a good thing to check that all the topics have been covered. But how to operatively conduct an interview? What to ask for?

The interview, focused on patient care, includes 3 phases: 1) an initial phase; 2) a central phase aimed at exploring four fundamental themes (illness experience; problems related to the disease; relapses of the disease on one's life and on loved ones; needs related to the current situation); 3) a final phase.

The different phases are identified below, accompanied by some sample questions:

1) *the initial phase*, in which there is the presentation of the object of investigation and the explanation of the purpose of the interview. This phase is summarized in two sub-phases:

1a. Introduction to the interview

In this phase it is useful to put the person at ease as much as possible, thanking him for having accepted the invitation and giving the availability to provide clarifications.

1b. Opening question

Example: "I will ask you some questions about your health situation; you are free to answer and tell

me if you doesn't feel like answering. Do you have anything to ask me?".

2) *The central phase,* in which the "core" contents of the interview are investigated. In this phase, the areas to be investigated are explained and defined with open questions. In particular, the following constructs are explored:

2a. Illness experience

Example: "Do you feel like telling how you are experiencing the condition of illness in which you find yourself?

(for the interviewer only: it is useful to keep the attention on the areas of interest, such as the worsening of the illness, possible complications, loss of autonomy, loneliness ...).

2b. Problems related to the disease

Example: "In what you told me, and referring to your experience, do you feel like telling your most relevant problems? Can you give me an example?"

(for the interviewer only: if the person expresses problems only on a physical level, he can try to focus his attention on problems related to other dimensions, such as psychological, social or spiritual).

2c. Relapses of illness over one's life and on loved ones

Example: "Would you like to tell if and how these problems affected your family and your social life? Can you give me an example?".

(for the interviewer only: try to investigate what problems the disease may have determined on the family or on social relationships and if family and social relations can be considered a resource).

2d. Needs related to the current situation

Example: "Do you feel like telling what you need most in this phase of your life?"

(for the interviewer only: try to understand what the priorities are for the person and the reasons).

3) *The final phase* of the interview, in which a final question, thanks and greetings are expected.

Example: "Are there any other aspects you would like to talk about? Are there other things that came to mind?".

(for the interviewer only: it is a conclusive question, but which opens to further reflections).

2. The Narrative Interview Analysis

As highlighted until here, conducting a narrative interview requires specific transversal skills related to the professional's relational/communicative competence. However, being a professional expert in the use of narrative interview also means learning a technical methodology that allows to analyze the interview itself with a non-categorical and non-interpretative approach, instead idiographic and "expository", allowing to order the contents, still staying close to the words and concepts expressed by the person.

Therefore, the analysis of the narrative interview foresees three steps which, as in a good film editing, reflect three progressively more generalized moments of analysis: transcription, content analysis, meaning analysis.

2.1 Recording and transcription

This first step is undoubtedly the "technical prerequisite" of the analysis, yet it comes with a first level of interaction with the contents rising from the narration. In fact, at this level, the professional proceeds with the detailed transcription of the recorded narration or, in the absence of recording, with the immediate transcription of the crucial points that emerged during the narration. In this step, the professional will write the whole interview, typing out both the patient's words and those used by himself, to allow a thorough and detailed analysis of the entire interview, intended as a unique moment of interaction between the two actors. It is also fundamental to transcribe the feelings and emotions that have been conveyed by the person at the paraverbal (modification of the tone, pitch, and pacing of the voice, as for silences, long pauses, excited tones...) and non-verbal (body posture and movements, eyes movements, facial expressions, sweating...) and who immediately hit the professional while conducting the interview. This step has to be necessarily immediately after the interview. The elements outlined here, in fact, will be a fundamental piece in the construction of the last step, the meaning analysis.

2.2 Content analysis

In the qualitative analysis scientific discussion,

different approaches were aimed to a detailed analysis of the narration (25). Here, we will mention only a few, just to emphasize how content analysis is a process combining an extreme flexibility, linked to the absence of standardized contents, to a rigorous methodological strategy, monitoring the quality and reliability of the information collected. The aim is to "stem" the professional's own interpretation favoring, instead, his critical thinking and his reflective ability. Regardless of the analytical approach chosen by the professional, the first step here is reading multiple times the narration. In this way the professional will put himself in an observer's point of view with respect to the dynamics of the interview, bringing out the main thematic areas, the themes and the main categories.

2.2.1 Narrative analysis's models: an overview

The models of narrative analysis can be considered the theoretical lenses through which the attention is focused on certain aspects of the narration, while sharing the common goal of capturing the experience lived by the single person through the study of the story that he/she tells (25). These approaches can be chosen and used separately, but a pluralist vision could allow the practitioner to choose how to combine these reading lenses, in order to reach a broad analysis of the single narration.

Below are some of these models, and the technical features that define them.

1. Labow and Waletsky model (26), in Frost (25): it is based on the identification of narrative events using a structural linguistic perspective. The sentences of the narration are temporally ordered according to a scheme including 'beginning, middle and end'.

2. Poetic model of Gee (27), in Frost (25): provides a set of rules for organizing text by emphasizing the prosodic and paralinguistic aspects of speech, such as the pitch and intonation. The model pays close attention to the rhythm of the narration and offers a way of systematically deconstructing the narrative into groups of Lines, which in turn define Strophes, Stanzas and Parts of a story. This is useful in identifying changes of topic within stretches of speech and text.

3. Critical narrative analysis model of Emerson and Frosh, (28) in Frost (25): this models takes account of the interaction between interviewer and narrator. It utilizes Gee's poetic model but also actively considers the interviewer's role throughout the process, to counteract the tendency to draw on personal and professional discourses to impose pre-given meaning on texts. The use of Gee's model ensures that the interpretations remain grounded in the text whilst a systematic reflexive consideration of role makes the subjectivity of the interviewer explicit. This model emphasizes on the privileging of the participant's words.

4. The 'performative model' of Riessman, (29) in Frost, (25): it uses the Gee's model to examine the text, but draws attention to metaphors as organizing structures that frame narratives that may not be easily identifiable any other way.

5. The Qualitative Analysis Guide of Leuven (30): a systematic but non-rigid method and an actual guide, that is characterized by iterative processes of digging deeper, moving between various stages of the process itself.

6. Core Story Creation of Petty and Thomas (31): it involves reconfiguration of raw narratives, identifying elements of emplotment and re-ordering these to form a constructed story.

7. Grounded Theory approach of Willig (32): it involves the progressive identification and integration of meaning categories deriving from the narrative. It places the emphasis on the identification of the categories and the relationships that exist between them, to create an explanatory context. The categories emerge from the grouping of narrative components that share the central characteristics.

2.3 Meaning analysis

This final analysis's step is the most delicate as it represents the synthesis of what was previously analyzed (immediate analysis, content analysis), with the aim of identifying the possible meanings that the person attributes to what he/she said, without however indulge in the interpretation of contents based on one's own personal (or professional) pre-established mental categories.

At this stage, the professional must arrive at a broader vision of the same narration, which will be viewed as a unitary set of data. The professional will

have to recall the impressions emerged during the narrative, tone of voice, posture and silences during the narration. In this type of analysis, it is necessary that the professional activates his relational competence and his emotional resonance throughout the narration, asking himself "how did I feel?".

This level of analysis aims to grasp the essential inner thoughts, and is aimed at identifying meta-problems or higher order resources, derived from their general condition, from their non-verbal behavior and the relational aspects of the intersubjective encounter between the patient and the caregiver. The use of the person's own words, in every phase of this process, will allow the professional to protect the idiographic, and not nomothetic, vision of what emerged from the narration.

3. A narrative interview analysis: the story of Marianna

Below is a brief interview on the experience of Marianna's illness, from the moment of diagnosis to the current condition. Marianna, 74 years old, received a diagnosis of diabetes 10 years earlier and the interview is collected during a regular assessment. The interview was conducted by Clara, a nurse with advanced expertise in conducting narrative interviews. The analysis was performed using a Grounded theory approach, which requires a first subdivision into Extracts, identified on the basis of the thematic sections of the narration, in accordance with the Poetic method, and a subsequent enucleation of the thematic categories defined by the patient's own words. This definition is followed by the meaning analysis, with the integration of the information that emerged during the conduct of the interview.

3.1 Content analysis

1. "I wanted to slap him "

Receiving the diagnosis for Marianna is a moment of shock, which shows with feelings of fear, worry and despair.

"One day I went there with the [blood test] results and he came out [the doctor] came out, beautiful as ever and told me" well ... you have diabetes" (Extract 2)

"I immediately wanted to slap him ... but how can you tell me I'm sick with that face?" (Extract 3)

"I left all pissed off and worried" (Extract 4)

"I was desperate and call all my friends" (Extract 5)

2. "I did not understand anything"

Marianna tells her experience of confusion linked to a quick and summary presentation of information on the effects of this chronic pathology on her lifestyle. However, she also underlines the transition from the state of confusion to a level of comprehensible knowledge and understanding of her personal condition, thanks to the intervention of a specialized nurse.

"I left [...] with more questions than answers because he told me so, then he just gave me a very nice colored card with written things that I totally did not understand" (Extract 4)

"What should I do with this disease?" (Extract 7)

"The nurse started talking to me clearly" (Extract 8)

"Sugar instead of going where it should go, lies in the veins and ruins it, it "frosts" them... and after so long that I no longer have my insulin running, they get ruined" (Extract 9)

3. "It was a disaster [for my life]"

Marianna tells her state when she realizes the repercussions of the chronic condition on her lifestyle. She shares an emotional state of sadness, despair and a sense of injustice, yet her and her family's effort to accept this new condition.

"He told me that practically I could no longer eat everything I liked" (Extract 10)

"... maybe I can get away every now and then ... and the initial weight was back, evenmore ... and again I cried ..." (Extract 11)

"It was a disaster ... no pasta ... no lambrusco [Italian wine]... no potatoes, and I like so much mashed potatoes, no cakes ... a disaster ..." (Extract 10)

"I cried because it seemed to me that God was mad at me" (Extract 12)

"What a bad time ..." (Extract 12)

"G. [her husband] was pissed because there was nothing good to eat at home and he said 'I'm not sick, can I have something good to eat?'" (Extract 11)

4. "This pretty cute nurse"

During the narration, Marianna continually names

people close to her whom she addressed to during the difficult phase of illness adjustment. Formal figures (nurse) and informal figures (friends, nephews, relatives) played a strong supporting role in her path.

"I used to go to this pretty cute nurse every once in a while and she saw that I was sad" (Extract 13)

"The important thing is that I can go to the nurse ... because she talks to me as I like " (Extract 19)

"I called in despair all my friends that I knew having my same problem and they told me: 'Dear God, M. but don't worry, you'll see that it's nothing ... you won't even notice you have something ... you do your stuff , take the medicines the doctor tells you to, take the blood tests you need to and that's it'" (Extract 5)

"My niece started to tap on that tablet... and she pulled out all of the healthy recipes, without sugar ... or, when she was at home with me, we went shopping and she helped mi understanding something" (Extract 14)

"Then at Christmas they gifted me a cookbook with all the recipes for diabetics" (Extract 15)

"They helped me [the family members] to lose again a few more pounds and still feel happy" (Extract 14)

"… But she [my friend] helped me a little bit in the whole story because she told me how she used to do it, what she used to eat..." (Extract 17).

5. "I took it as a habit"

Marianna describes her transition of her perspective on the illness from "sentence" to habit, by learning small strategies that help her find a new balance.

"Immediately I was quite good, and I had lost weight and I always took the medicines... but this do not weigh me down, I already take so many" (Extract 13)

"I realized that I could make the cake good but with different ingredients... or they made me take the whole brain pasta that does not hurt... or the half normal and half whole flour to make pizza" (Extract 14)

"A cookbook with all the recipes for diabetics... Dear God, such a show! [..]. G. was happy to come home and see that book open in the kitchen because he knew that I was fine and he would have ate well "(Extract 15)

"We found a balance" (Extract 15)

"Now it's 6 months that I use that thing to see blood sugar level and understand how much sugar I have in my blood... I do it every morning before having breakfast and taking medicine" (Extract 16)

"And then I took it a bit as a habit that even when there are not the grandchildren, I'm going by myself to make a walk" (Extract 18)

6. "It looks like a bad earthquake, but then everything will pass"

Marianna, during this narration, arrives at a positive synthesis of her story, aware of the jolts she has received but also of a new positive reformulation, following the understanding of her condition and the adjustment strategies that she managed to implement to preserve her quality of life.

"... in short, I got sick but it could have been worse ... I can't complain" (Extract 19)

"That I consider myself a sick and lucky little patien... I immediately saw everything bad ... that seemed to me to have a bad disease (a tumor) but then I only needed to know my illness... you take the measures and discover that with the time you learn to know them" (Extract 20)

"It's always good for me to talk about what happened to me because if I ever meet someone like me who has diabetes, I'd tell them to stay calm. Even if at first it seems like a bad earthquake but then everything will pass" (Extract 21).

3.2 Meaning analysis

Marianna, at the moment of the interview, is a woman who has succeeded in integrating the condition of diabetic patient into her story (*"I took it as a habit", "It looks like a bad earthquake, but then everything will pass"*). Reviewing her history in this narrative, she immediately shares the first difficulties, as how she felt abandoned at the moment of the diagnosis communication, and how she felt downgraded, almost mocked. The first impact that the diagnosis had on her came with disbelief and anger ("*I wanted to slap him*"), along with a profound confusion *("I didn't understand anything"*). Having a chronic illness forces Marianna to change her life, her habits and alter the characteristics of her role as wife, mother and grandmother. She lives an intense suffering, which manifests itself as a strong sense of desperation, crying, an apparently insurmountable difficulty *("it was a disaster"*). However, during the narration Marianna shows her important resources that, after the initial displacement, allow her to adjust to this new condition. The first is social support, in fact Marianna appoints people who knew how to support her and that

she, despite the difficulty and desperation, has actively sought and heard, taking information, ideas and reassurances supported her creating a new normality *("that pretty cute nurse"*). The second is the strong, emotional and positive spirit of Marianna; during the whole interview, in fact, she uses a calm and serene tone, and she is extremely collaborative and affectionate towards the nurse who collects the narration. She uses vivid and colorful expressions, transmitting a very strong vitality and sympathy, temperamental characteristics that, thanks also to the valid support she received from the external environment, certainly succeeded in activating a process of "post traumatic growth" (33) which allowed her to create a new normality *"and still feel happy*".

4. Conclusions

The relevance of the narrative interview within the Healthcare System, as an accurate tool for gathering information, is now well recognized in the international scientific literature (1, 2).

The aim of this study was to offer an in-depth and applied analysis of the "narrative interview" in the clinical setting and with the purpose of assess the condition of this person. What is described here allows us to formulate a very strong first conclusion: the work for a good narrative interview starts long before the interview itself.

It begins with a professional who decides to become an expert in this technique and train to optimize some qualities (empathy, active listening, and reflective thinking) that are already part of his professional background, with the aim of making them even more accessible and defined, and ready to be used during the interview collection.

Again, the professional is required to know, based on his experience and his ability, how to analyze and make decisions, the best context and timing, to help the person open up and share his/her experience, without feeling forced, under scrutiny and, above all, without having the feeling to chase a "right" answer expected by the interviewer. The correct planning of the setting, in fact, supports the expressive freedom of the person who, in this approach, is absolutely central.

During the conduction, a professional who is a good interviewer has learned to dose his/her presence, so that he/she can support the person narrating, still being able to freely collect the person's words, so important to define his/her experience with a subjective lens. At the same time, the professional learn to be present in the moment, and to receive and store all the information that comes from the non-verbal channel and that may not always remain imprinted in an audio track.

The interview analysis phases, as we have said, can refer to different approaches, all scientifically reliable and able to support an interpretation that is both free and rigorous.

In this specific case, the Authors have chosen to refer to an original approach, borrowed from the Grounded Theory, in the belief that the possibility of preserving the person's words even in the creation of categories of content, allows a deep analysis and the possibility to compare the person solely and exclusively with him/herself, in his/her experience of illness.

Minimizing inferences and categorizations, also allows the professional to use in different applications the information appropriately integrated with objective/quantitative data, as for the assessment (17), or the creation of an educational plan (15), or the diagnosis (14), still remaining in a perspective always deeply internal to the person, and continuing to know him/her a little more and to reverberate with his/her intrinsic needs, every time the professional reads the analysis.

Furthermore, the meaning analysis allows the professional to integrate his/her experience linked to that moment and to that interaction, focusing on what emerges in the immediacy of the narrative collection, rather than ideas or thoughts about the person who can be formulated in the long term. This can help the professional to demystify the personal attributes that each person physiologically performs, managing to identify the elements that arise exclusively from that interaction at that precise moment.

In this way, the uniqueness and unrepeatability of each narrative is preserved, which in turn reflects the uniqueness of each person who lives and shares his/her experience of illness.

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References

1. Anderson C, Kirkpatrick S. Narrative interviewing. Int J Clin Pharm 2016; 38(3): 631-634.
2. Wang CC, Geale SK. The power of story: narrative inquiry as a methodology in nursing research. IJNSS 2015; 2(2): 195-198.
3. Fortuna J. Integrating Art and Narrative to Enhance Quality of Life in Palliative Care. OJOT 2018; 6(4):14.
4. Launer J. Narrative-based.Primary Care. Abingdon, UK: Racliffe Medical Press, 2002.
5. Zannini L. Medical humanities e medicina narrativa. Nuove prospettive nella formazione dei professionisti della cura [New perspectives in the training of care professionals]. Milano: Raffaello Cortina, 2008.
6. Murphy J W, Franz BA, Schlaerth C. The Role of Reflection in Narrative Medicine. J Med Educ Curric Dev 2018; 5(1): 1-5.
7. De Vincentis G, Monari F, Baldari S, Salgarello M, Frantellizzi V, Salvi E, Reale L, Napolitano S, Conti G, Cortesi E. Narrative medicine in metastatic prostate cancer reveals ways to improve patient awareness & quality of care. Future Oncol 2018; 14(27): 2821-2832.
8. Slocum RB, Howard TA, Villano, JL. Narrative Medicine perspectives on patient identity and integrative care in neuro-oncology. J Neurooncol 2017; 134(2): 417-421.
9. Artioli G, Foà C, Taffurelli C. An integrated narrative nursing model: towards a new healthcare paradigm. Acta Biomed HP 2016; 87(4): 13-22.
10. Artioli G, Copelli P, Foà C, La Sala R. Valutazione infermieristica della persona assistita-approccio integrato [Nursing assessment of the person – integrated approach]. Milano: Poletto Editore, 2016.
11. Pegna, A. L. (2017). La relazione tra medico e paziente. [The relationship between doctor and patient.] Appunti sulle politiche sociali 2017, 2: Trimestrale Gruppo Solidarietà. Retrived from http://www.sossanita.it/doc/2017_06_Appunti-GRUSOL-politiche_sociali_2.pdf.
12. Egnew TR. A narrative approach to healing chronic illness. Ann Fam Med 2018; 16(2): 160-165.
13. Artioli G, Foà C, Cosentino C, Taffurelli C. Integrated narrative nursing: a new perspective for an advanced assessment. Acta BioMed HP 2017; 88(1): 7-17.
14. Artioli G, Foà C, Taffurelli C, Cosentino C. "I would like to tatoo the illness on my arm". The Integrated Personalized Nursing Diagnosis (IPND). Acta Biomed HP 2018; 89(7): 50-59.
15. Artioli G, Foà C, Cosentino C, Sulla F, Sollami A. Taffurelli C. (2018). "Could I return to my life?" Integrated Narrative Nursing Model in Education (INNE). Acta Biomed HP 2018; 89(4):5-17.
16. Picchi S, Bonapitacola C, Borghi E, Cassanelli S, Ferrari P, Iemmi B, Alfieri E, Artioli G. The narrative interview in therapeutic education. The diabetic patients' point of view. Acta Biomed 2018; 89(6): 43-50.
17. Artioli G, Foà C, Cosentino C, Sollami A, Taffurelli C. Integrated narrative assessment exemplification: a leukaemia case history. Acta BioMed HP 2017; 88(3): 13-21.
18. Connelly FM, Clandinin, D. Narrative inquiry. In J. L. Green, G. Camilli, & P. Elmore (Eds.), Handbook of complementary methods in education research (3rd ed., pp. 477–487). Mahwah, NJ: Lawrence Erlbaum, 2006.
19. Clandinin DJ, Pushor D, Murray Orr, A. Navigating sites for narrative inquiry. J Teach Educ 2007; 58(1): 21-35.
20. Bucci R. Manuale di Medical Humanities [Manual of Medical Humanities]. Roma: Zading, 2006.
21. Charon R. Narrative medicine. N Engl J Med 2004; 350: 862-864.
22. Lunney M. Il pensiero critico nell'assistenza infermierisitica [Critical -thinking in Nursing Science]. Rozzano: Casa Editrice Ambrosiana, 2010.
23. White L, Duncan G, Baumble W. Fondamenti di infermieristica. Principi generali dell'assistenza infermieristica. Integrated narrative nursing for an advanced assessment [Basics of Nursing Science. General assumptions of Nursing Care]. Second Edition. Napoli: EDIses, 2013.
24. Bormolini G, Nardone G, Ghinassi A. Costruire la buona morte [Building the good death]. Psicologia Contemporanea 2017; 264: 24-29.
25. Frost N. "Do you know what I mean?": The use of a pluralistic narrative analysis approach in the interpretation of an interview. Qual Res 2009; 9(1): 9-29.
26. Labov W, Waletzky J. Narrative Analysis: Oral Versions of Personal Experience, in J. Helm (ed.) Essays on the Verbal and Visual Arts. Seattle, WA: University of Washington Press, 1967.
27. Gee JP. A Linguistic Approach to Narrative. Narrat Inq 1991; 1(1): 15-39.
28. Emerson P, Frosh S. Critical Narrative Analysis in Psychology. London: Palgrave Macmillan 2004.
29. Riessman CK. Narrative Analysis. London: Sage 1993.
30. Dierckx de Casterle BD, Gastmans C, Bryon E, Denier Y. QUAGOL: A guide for qualitative data analysis. Int J Nurs Stud 2012; 49(3); 360-371.
31. Petty J, Jarvis J, Thomas R. Core Story Creation: Analysing narratives to construct stories for learning. Nurse Res 2018; 25(4); 47-51.
32. Willig C. Introducing Qualitative Research in Psychology. Maidenhead, Berkshire, UK: McGraw Hill Education, 2013.
33. Tedeschi RG, Calhoun LG. Posttraumatic growth: Conceptual foundations and empirical evidence. Psychol Inq 2004; 15(1): 1-18.

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The CiTAS scale for evaluating taste alteration induced by chemotherapy: state of the art on its clinical use

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Abstract. *Background:* Cancer is the leading cause of death worldwide. Of the various therapeutic approaches, chemotherapy is the most widely used treatment. Among the various side effects associated with this treatment, taste alterations (TAs) have received little attention, even though they have a serious impact on the nutritional aspect and quality of life (QoL) of patients. TAs concern 75% of the patients receiving chemotherapy, and this figure is still considered to be underestimatedbeacuse could be due both to inadequate attention and to the absence of specific subjective tools able to fully evaluate TAs in patients undergoing chemotherapy. *Methods:* A review by querying CINAHL, PubMed, Scopus and Google Scholar databases about the current status of use of the CiTAS self-evaluation scale, was performed. *Results:* From critical reading of the selected reports, it can be said that until now CiTAS has not been used to a large extent for evaluating taste, even at a late stage in patients undergoing chemotherapy. However, the results and the selected reports seem to indicate hope for its wider use. *Conclusions:* In literature, CITAS scale has been used on very heterogeneous populations and not adequately studied in specific care settings, its use within controlled trials could implement its spread.Correct and subjective evaluation of TAs would allow the planning of specific and personalized interventions aimed at providing adequate nutrition to support the maintenance and/or achievement of a correct body mass index. All this could contribute significantly to a better perception of QoL in patients undergoing chemotherapy. (www.actabiomedica.it)

Key words: taste alteration, cancer patients, chemotherapy effect, nutrition, CiTAS scale

Introduction

According to the World Health Organisation (WHO), cancer is among the leading causes of death (1-3); in 2018, 9.6 million deaths from cancer are expected (2). In particular, in Europe, there are about 4,229,662 new cases of cancer(2). Despite new therapeutic approaches such as immunotherapy (4), treatments available today against cancer include surgery, chemotherapy and radiation therapy (5). Chemotherapy is often used in the treatment of such diseases. These treatments are effective against cancer cells but also attack the physiological development of normal cells (6, 7).

The adverse effects of these therapies necessary for the treatment of cancers are now well known (5, 8, 9). The QoL of such patients is increasingly considered as a fundamental outcome of the therapeutic process(10-12). Strategies to reduce adverse events in the treatment of cancer diseases have recently been the subject of greater attention (13). Patients undergoing these treatments perceive various symptoms that may affect completion of the treatment course and their quality of life (QoL), both during and after treatment

(14-17). Chemotherapy can cause adverse effects that have a negative impact on nutritional status, such as anorexia, changes in taste and smell, aversion to food, nausea and vomiting, mucositis, constipation, diarrhea and early satiety (18). Research initially focused on the gastrointestinal consequences of cancers and their treatments (19), leaving aside other aspects such as taste alterations (TAs). TAs are the most distressing side effect with a serious impact on the nutritional aspect and QoL of patients and have received little attention from healthcare professionals (5). Taste is an important sensation that serves to evaluate the nutritional content of food, support oral intake and prevent the ingestion of potentially toxic substances. Patients with loss of taste have worse outcomes than those who have not lost their sense of taste and have been able to maintain food intake and nutritional support (20). TAs affect 75% of patients undergoing chemotherapy, and are still considered to be underestimated(19), despite their impact on the QoL of patients undergoing this treatment appearing to be increasingly known (7, 21, 22). This underestimation could be due both to inadequate attention and to the absence of specific subjective tools (6) able to fully evaluate TAs in patients undergoing chemotherapy. The CiTAS scale (23) is a tool for immediate and easy use (6).

The CiTAS original version (KANO) is a self-administered questionnaire composed of 18 items evaluated on a five-point Likert-type scale and divided into three dimensions:

1) quantitative changes in the perception of flavours (hypogeusia and ageusia),
2) qualitative changes in the perception of flavours (heterogeusia, cacogeusia) and
3) problems related to nutrition (difficulty in eating hot or fat foods).

Using a Likert scale 1-5 (where 1 = no difficulty or absence of the disturbance and 5 = maximum difficulty or disturbance), CiTAS evaluates the 4 dimensions of gustatory disturbances: intensity of taste, discomfort, phantogeusie and parageusia, and general alterations of taste. CiTAS can help in the planning of specific nursing interventions, providing adequate nutrition to support the maintenance and/or achievement of a correct body mass index. This can contribute to a better perception of QoL and to coping better with the side effects of chemotherapy (6). Through this mini-review we wanted to investigate the state of the art about use of the CiTAS scale for the evaluation of TAs in cancer patients undergoing treatment with chemotherapeutic drugs.

Materials and Methods

The review process was conducted in the following steps: identification of the research problem, bibliographic research, data evaluation, data analysis and finally presentation of the summary of results. The research was conducted using the CINAHL, PubMed, Scopus and Google Scholar databases. The MeSH search terms included, “Chemotherapy-induced Taste Alteration Scale”, “CiTAS”, “Cancer Patients, Taste alteration”, “Taste disorder” and “Chemotherapy” were combined with each other. The formulation of search terms/keywords and research on electronic databases was performed in collaboration to ensure greater validity and reduce biases in conducting research. Our research included articles in English published between January 2008 and December 2018. The limitations used were: human population, English language, publications in the last 10 years and scientific articles. Studies regarding patients of paediatric and neonatal age and validation studies were excluded. Only studies that met the previously described bibliographic search criteria were considered and only primary studies were included. Abstracts were evaluated according to the inclusion and exclusion criteria described below in order to determine whether or not to continue search and retrieval of full texts. Naturally, the same studies present on several databases were evaluated only once. All the full texts were in turn evaluated on the basis of the general and specific inclusion/exclusion criteria below to identify those eligible for review. Bibliographic research was conducted from May 3, 2018 to December 31, 2018. Research of articles and their analysis was conducted independently by three researchers.. For selection criteria, articles from national and international scientific literature whose title and content contained at least one of the keywords or a link to them were included. Selection was made after careful reading of the abstract and the complete article (Table 1).

Table 1. Selection criteria

Database	Key words	Search strings	Results
PubMed	Chemotherapy-induced taste alteration scale, Taste alteration OR Taste disorder, Chemotherapy	(chemotherapy-induced[All Fields] AND ("dysgeusia"[MeSH Terms] OR "dysgeusia"[All Fields] OR ("taste"[All Fields] AND "alteration"[All Fields]) OR "taste alteration"[All Fields]) AND ("weights and measures"[MeSH Terms] OR ("weights"[All Fields] AND "measures"[All Fields]) OR "weights and measures"[All Fields] OR "scale"[All Fields])) AND (("dysgeusia"[MeSH Terms] OR "dysgeusia"[All Fields] OR ("taste"[All Fields] AND "alteration"[All Fields]) OR "taste alteration"[All Fields]) OR ("disease"[MeSH Terms] OR "disease"[All Fields] OR "disorder"[All Fields])) AND ("drug therapy"[Subheading] OR ("drug"[All Fields] AND "therapy"[All Fields]) OR "drug therapy"[All Fields] OR "chemotherapy"[All Fields] OR "drug therapy"[MeSH Terms] OR ("drug"[All Fields] AND "therapy"[All Fields]) OR "chemotherapy"[All Fields])	4
CINAHL		Chemotherapy-induced Taste Alteration Scale OR CiTAS AND cancer patients AND (taste disorders or taste alterations)	6
Scopus		(ALL (chemotherapy-induced AND taste AND alteration AND scale) AND TITLE-ABS-KEY (cancer AND patients) AND TITLE-ABS-KEY (taste AND disorder) OR TITLE-ABS-KEY (taste AND alteration) AND TITLE-ABS-KEY (chemotherapy))	16
Google scholar		Chemotherapy-induced Taste Alteration Scale +CiTAS +cancer patients +taste alteration or disorder	15

Results

CiTAS has been used until now to evaluate taste alterations even at a late stage in patients undergoing chemotherapy. One study investigated these alterations and radiotherapy (Table 2). In particular, the articles considered for our study are described in Table 2. The descriptive-correlational study by Antony and Pavithran (5) in India was aimed at determining taste alterations and their possible relationship with the Quality of Life of patients undergoing chemotherapy. The study was conducted on 100 patients, aged between 20 and 65, who underwent at least 3 cycles of chemotherapy treatment, through convenience sampling. The CiTAS scale was used to evaluate the taste status of participating patients. All patients enrolled had taste alteration: 10% of the severe sample, and 50% of the entire moderate sample. Such taste alterations showed a negative correlation with the Quality of Life, highlighting how an increase in taste alteration is related to a worse Quality of Life. The 2015 Sozeri study (7) aimed to determine the factors influencing taste alteration induced by chemotherapy, based on the subscales of the CiTAS instrument. Conducted on 184 patients undergoing chemotherapy treatment enrolled at the Haematology Unit of a university structure, its results showed how gender and age were variables that did not influence any CiTAS subscale. On the contrary, the most severe taste alterations were found in patients with xerostomia and a sore mouth. A study with the same objective is that of Rea et al.(24) conducted on 152 patients undergoing chemotherapy. Here, instead, females - like patients with phantoegusia and paraegusia - seem to experience this type of alteration more. The preliminary study by Simeone et al. (25), which investigates taste alterations in young and elderly patients undergoing chemotherapy treatment confirms that elderly subjects over 70 years of age have a taste alteration induced by chemotherapeutic drugs greater than any other group of patients with ages that differ

from theirs.The aim of the multicentric observational study by Guillari et al. (19), conducted on 92 women recruited through convenience sampling, is to describe the qualitative taste alterations in women undergoing chemotherapy. The results show how phantogeusia and parageusia were more present than in the other CiTAS classes. Furthermore, in the sample of women considered, a reduction in appetite and an absence of salivation showed a strong negative correlation with all CiTASsubscales. The 2017 cross-sectional study by Sato et al. (26), conducted on 91 patients, evaluated the prevalence of taste alterations and the predictive factors of these taste disorders at a late stage in patients who had survived allogeneic hematopoietic cell transplantation. Taste disorders were observed in almost half of the patients investigated. The most frequent form of taste disturbances at a late stage was reduced appetite. Almost all taste disturbances were mild in their severity. The taste disturbances investigated could return to normal levels after 1 year from transplantation. Among patients more than 1 year after HCT, chronic oral GVHD was significantly associated with an increased risk of phantogeusia and parageusia, whereas that among patients less than 1 year after HCT it was not. Immunosuppressive treatment did not affect any taste disturbance in patients either more than 1 year or less than 1 year after HCT. The 2018 longitudinal study by Jin et al. (27) is characterised by the novelty of the setting of use of the CiTAS scale. The study aims to dynamically evaluate taste alteration and its correlation with weight loss in patients with cancer of the head and/or neck treated with radiotherapy incombination or not with a chemotherapy protocol or after surgery. Of the 161 patients enrolled, the complete results for 114 patients showed how taste alterations were present at the beginning of treatment, increasing halfway through the therapeutic cycle and remaining constant until the post-term follow-up of treatment. Within this time frame, all aspects of taste alteration investigated by CiTAS increased, decreasing relative to the intermediate period but with values that were higher than those of the initial period. Weight loss was recorded in all enrolled patients. The total CiTAS score, decline in basic taste, general taste alterations, discomfort, and phantogeusia and parageusia all had a significant negative effect on weight loss.

Discussion

Use of the CiTAS scale is not yet widespread as desired.To date CiTAS has been used to evaluate taste alteration even at late stages in patient undergoing chemioterapy. The QoL of patients with cancers is more influenced by chemioterapy; the QoL is considered as a fundamental outcome of the therapeutic process (10-12). Chemotherapy can cause adverse effects that have a negative impact on nutritional status, such as anorexia, changes in taste and smell, aversion to food, nausea and vomiting, mucositis, constipation, diarrhea and early satiety (18).

TAs are the most distressing side effect with a serious impact on the nutritional aspect and QoL of patients (5). Taste is an important subjective sensation that influence Body Mass Index. Patients with loss of taste have worse outcomes than those who have not lost their sense of taste and have been able to maintain food intake and nutritional support (20). TAs affect are underestimated because there is absence of specific subjective tools (6) able to fully evaluate TAs in patients undergoing chemotherapy. The CiTAS scale (23) is a tool for immediate and easy use (6).

Primary studies selected according to the inclusion criteria of this work show how this scale has been used on a very heterogeneous population (19), young and old (25)women, with different types of cancer (24). All patients undergoing chemotherapy treatments. Just the non-differentiation of the various chemotherapy treatments may represent a limitation that can be found in the current literature, just as other limitations could be the presence of comorbidity and/or other concomitant treatments that could influence TA. All the selected studies have investigated the TAs already after the first chemotherapy treatment. Only one study (7) waited three cycles of chemotherapy before proceeding with an evaluation of the TAs. However, we consider it a duty to point out the approach taken by Jin et al (27) which included a baseline assessment. Precisely because of what has been said so far, we believe that this approach is the most desirable. An early subjective assessment of taste and subsequently of its alterations may allow the implementation of specific and targeted intervention programs aimed at improving the QoL of these subjects. The selected studies show

Table 2. Description of articles selected

Title	Objectives	Design	Instruments	Results	Limitations
Antony, Pavithran, 2017. Taste alteration and quality of life of patients receiving chemotherapy	Determine taste alterations and their possible relationship with the Quality of Life of patients undergoing chemotherapy.	Descriptive-correlational.	Semi-structured questionnaire created ad hoc; reports from medical documents (days of chemotherapy, neoplasm, chemotherapy regimen); CiTAS; University of Washington Quality of Life Questionnaire.	All patients enrolled had taste alteration: 10% of the severe sample, and 50% of the entire moderate sample. Such taste alterations showed a negative correlation with the Quality of Life, highlighting how an increase in taste alteration is related to a worse Quality of Life.	The influence of any comorbidity on taste alteration was not investigated. Furthermore, a single chemotherapy regimen was not investigated.
Simeone et al., 2018. Taste disorders in younger and older patients undergoing cancer chemotherapy: A preliminary multicenter study	Investigate changes in taste alterations in people undergoing chemotherapy with an age of 40 years or less and in people aged 70 or over	Multicentric observational	Sociodemographic questionnaire created ad hoc; reports from medical documents (days of chemotherapy, neoplasm, chemotherapy regimen); CiTAS	This study showed a correlation between older age and taste alterations induced by chemotherapy. Furthermore, statistically significant differences between the young and the elderly group were observed for problems with chewing and dental prostheses.	Limited sample
Guillari et al., 2018. Dysgeusia in women undergoing cancer chemotherapy: results of a preliminary observational study	Description of qualitative taste alterations in women undergoing chemotherapy	Multicentric observational	Sociodemographic questionnaire created ad hoc; reports from medical documents (days of chemotherapy, neoplasm, chemotherapy regimen); CiTAS	The strong presence of dysgeusia is clear, particularly understood as a real distortion of taste sensation (phantogeusia and parageusia) in the female sample under examination	
Rea et al., 2018. An Investigation of Taste Alteration in Patients Undergoing Cancer Chemotherapy	Understand the factors influencing taste disturbances in patients undergoing chemotherapy	Multicentric observational	Sociodemographic questionnaire created ad hoc; reports from medical documents (days of chemotherapy, neoplasm, chemotherapy regimen); CiTAS	Major taste alterations were observed in the female gender and in patients with phantoegusia and paraegusia	There exists a wide variety of chemotherapy protocols analysed and the correlation between tumourlocalisation and taste disturbance was not tested.

(continued)

Table 2 (continued). Description of articles selected

Title	Objectives	Design	Instruments	Results	Limitations
Jin et al., 2018. Relationship between subjective taste alteration and weight loss in head and neck cancer patients treated with radiotherapy: A longitudinal study	Dynamically evaluate taste alteration and its correlation with weight loss in patients with cancer of the head and/or neck treated with radiotherapy in combination or not with a chemotherapy protocol or after surgery.	Prospective longitudinal observational	Sociodemographic data, type of tumour and type of treatment were found from clinical data; questionnaire created ad hoc for taste evaluation; CiTAS; weight and height measured at predetermined times useful for calculating BMI	Taste alterations are present at the beginning of treatment, increasing halfway through the therapeutic cycle and remaining constant until the post-treatment follow-up. Within this time frame, all aspects of taste alteration investigated by CiTAS increase, decreasing relative to the intermediate period but being higher than those of the initial period. Weight loss was recorded in all enrolled patients. The total CiTAS score, decline in basic taste, general taste alterations, discomfort, and phantogeusia and parageusia all had a significant negative effect on weight loss.	CiTAS created for evaluations with chemotherapy and non-radiotherapy treatments; absence of psychometric validation of the instrument; absence of quantitative analysis about food intake; strong loss of patients enrolled in the medium and long term and strong dominance of female patients should lead to interpreting the generalisability of the study with caution
Sato et al., 2017. A cross-sectional study on late taste disorders in survivors of allogeneic hematopoietic cell transplantation	Evaluate the prevalence of taste alterations and the predictive factors of such late taste disorders in patients who survived transplantation of allogeneic haematopoietic cells.	Transversal prospective	Information on patient characteristics and transplantation was collected from medical records; CiTAS.	Taste disorders were observed in almost half of the patients investigated. The most frequent form of taste disturbances at a late stage was reduced appetite. Almost all taste disturbances were mild in their severity. The taste disturbances investigated can return to normal levels after 1 year from transplantation. Among patients more than 1 year	The cause of taste disturbances could be multifactorial in patients undergoing allogeneic HCT due to the combination of various therapeutic treatments. Furthermore, although the effect of the oral condition, such as topical oral treatments, mouth hygiene and dental care, on post-HCG allogeneic taste disorders was not clarified in our study;

(continued)

Table 2 (continued). Description of articles selected

Title	Objectives	Design	Instruments	Results	Limitations
				after HCT, chronic oral GVHD was significantly associated with an increased risk of phantogeusia and parageusia, whereas that among patients less than 1 year after HCT was not. Immunosuppressive treatment did not affect any taste disturbance in patients either more than 1 year or less than 1 year after HCT.	an oral condition should be examined in future studies.
Sozeri and Kutluturkan, 2015. Taste Alteration in Patients Receiving Chemotherapy	Determine the factors that influence taste alterations in patients undergoing chemotherapy.	Descriptive	Patient Characteristics Identification Form; CiTAS	Taste alterations were observed more frequently in patients who have also had mouth sores along with xerostomia. There was no significant difference between other variables (age, gender, any other diagnosed disease, receiving drugs other than those for chemotherapy, smoking habits/oral therapy, diagnosis, stage and treatment protocol) and average scores obtained from CiTAS subscales	Non-RCT study

more descriptive-observational manuscripts, therefore, there are no primary studies that can be classified at the peak of scientific evidence. Longitudinal RCTs would be desirable for reinforcing the importance of this instrument. In addition to analyzing TAs in patients undergoing chemotherapy, this scale has also been used for patients undergoing another therapeutic regimen, such as radiotherapy (27). This confirms the attention of international research regarding TAs and the reliability of this scale in evaluating subjective TAs. In addition, there exist psychometric validation studies (6, 23, 28)this means that more and more professionals in the world feel the need to evaluate the TAs in order to guarantee a correct QoL of the subjects subjected to

chemotherapeutic treatments. This aspect lead to hope for a future use of CiTAS in new populations and/or similar populations but with different cultural backgrounds.

Conclusions

The nurse plays an important role in evaluating the nutritional status and quality of life of cancer patients. Chemotherapy remains a fundamental therapeutic strategy for cancer diseases. The side effects of chemotherapy are well known and TAs are a distressing side effect that can significantly affect the nutrition and QoL of patients, so close attention must be paid from the start of therapy. The purpose of nursing care for patients undergoing chemotherapy is to prevent or reduce treatment-related symptoms and problems. To date, there are no guidelines for the evaluation and management of TA, yet a correct and subjective assessment of TA would allow the planning of specific and personalized actions aimed at providing adequate nutrition to support the maintenance and/or achievement of a correct body mass index. All of this can contribute in an important way to a better perception of QoL.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

References

1. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. International journal of cancer 2015; 136(5): E359-86.
2. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: a cancer journal for clinicians 2018; 68(6): 394-424.
3. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015. Lancet (London, England) 2016; 388(10053): 1459-544.
4. Lowy DR, Collins FS. Aiming High-Changing the Trajectory for Cancer. The New England journal of medicine 2016; 374(20): 1901-4.
5. Anooja A, Sheela P. Taste Alteration and Quality of Life of Patients receveing Chemotherapy. Asian Journal of Pharmaceutical and Clinical Research 2017; 10(12).
6. Sozeri E, Kutluturkan S. The Validity and Reliability of Turkish Version of the Chemotherapy-induced Taste Alteration Scale (CiTAS). Clinical nursing research 2018; 27(2): 235-49.
7. Sozeri E, Kutluturkan S. Taste Alteration in Patients Receiving Chemotherapy. The journal of breast health 2015; 11(2): 81-7.
8. Montemurro F, Mittica G, Cagnazzo C, Longo V, Berchialla P, Solinas G, et al. Self-evaluation of Adjuvant Chemotherapy-Related Adverse Effects by Patients With Breast Cancer. JAMA oncology 2016; 2(4): 445-52.
9. Pearce A, Haas M, Viney R, Pearson SA, Haywood P, Brown C, et al. Incidence and severity of self-reported chemotherapy side effects in routine care: A prospective cohort study. PloS one 2017; 12(10): e0184360.
10. Paraskevi T. Quality of life outcomes in patients with breast cancer. Oncology reviews 2012; 6(1): e2.
11. Fiteni F, Westeel V, Pivot X, Borg C, Vernerey D, Bonnetain F. Endpoints in cancer clinical trials. Journal of visceral surgery 2014; 151(1): 17-22.
12. Osoba D. Health-related quality of life and cancer clinical trials. Therapeutic advances in medical oncology 2011; 3(2): 57-71.
13. Atkinson TM, Ryan SJ, Bennett AV, Stover AM, Saracino RM, Rogak LJ, et al. The association between clinician-based common terminology criteria for adverse events (CTCAE) and patient-reported outcomes (PRO): a systematic review. Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer 2016; 24(8): 3669-76.
14. Alvarez-Camacho M, Gonella S, Ghosh S, Kubrak C, Scrimger RA, Chu KP, et al. The impact of taste and smell alterations on quality of life in head and neck cancer patients. Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation 2016; 25(6): 1495-504.
15. Gamper EM, Giesinger JM, Oberguggenberger A, Kemmler G, Wintner LM, Gattringer K, et al. Taste alterations in breast and gynaecological cancer patients receiving chemotherapy: prevalence, course of severity, and quality of life correlates. Acta oncologica (Stockholm, Sweden) 2012; 51(4): 490-6.
16. Zabernigg A, Gamper EM, Giesinger JM, Rumpold G, Kemmler G, Gattringer K, et al. Taste alterations in cancer patients receiving chemotherapy: a neglected side effect? The oncologist 2010; 15(8): 913-20.
17. Epstein JB, Phillips N, Parry J, Epstein MS, Nevill T, Stevenson-Moore P. Quality of life, taste, olfactory and oral function following high-dose chemotherapy and allogeneic hematopoietic cell transplantation. Bone marrow transplantation 2002; 30(11): 785-92.

18. Caillet P, Liuu E, Raynaud Simon A, Bonnefoy M, Guerin O, Berrut G, et al. Association between cachexia, chemotherapy and outcomes in older cancer patients: A systematic review. Clinical nutrition (Edinburgh, Scotland) 2017; 36(6): 1473-82.
19. Guillari A, Esposito MR, Simeone S, Tessitore G, Lanzuise A, Gargiulo G, et al. Dysgeusia in women undergoing cancer chemotherapy: results of a preliminary observational study. Gazzetta Medica Italiana Archivio per le Scienze Mediche 2018; 177(10): 518-26.
20. Munankarmi D. Management of Dysgeusia related to Cancer. Journal of Lumbini Medical College 2017; 5(1): 3-12.
21. Bernhardson BM, Tishelman C, Rutqvist LE. Self-reported taste and smell changes during cancer chemotherapy. Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer 2008; 16(3): 275-83.
22. Epstein JB, Barasch A. Taste disorders in cancer patients: pathogenesis, and approach to assessment and management. Oral oncology 2010; 46(2): 77-81.
23. Kano T, Kanda K. Development and validation of a chemotherapy-induced taste alteration scale. Oncology nursing forum 2013; 40(2): E79-85.
24. Rea T, Esposito MR, Simeone S, Guillari A, Tessitore G, Lanzuise A, et al. An investigation of taste alteration in patients undergoing cancer chemotherapy. Gazzetta Medica Italiana Archivio per le Scienze Mediche 2018; 177(10): 509-17.
25. Simeone S, Rea T, Esposito MR, Tessitore G, Lanzuise A, Gargiulo G, et al. Taste disorders in younger and older patients undergoing cancer chemotherapy: a preliminary multicenter study. Gazzetta Medica Italiana Archivio per le Scienze Mediche 2018; 177(10): 527-31.
26. Sato T, Konuma T. A cross-sectional study on late taste disorders in survivors of allogeneic hematopoietic cell transplantation 2017; 96(11): 1841-7.
27. Jin S, Lu Q, Jin S, Zhang L, Cui H, Li H. Relationship between subjective taste alteration and weight loss in head and neck cancer patients treated with radiotherapy: A longitudinal study. European journal of oncology nursing : the official journal of European Oncology Nursing Society 2018; 37: 43-50.
28. Campagna S, Gonella S, Stuardi M, Sperlinga R, Cerponi M, Olivero M, et al. [Italian validation of the Chemotherapy Induced Taste Alteration Scale]. Assistenza infermieristica e ricerca : AIR 2016; 35(1): 22-8.

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Health-Care-Associated Infections Management, sow the seed of good habits: a grounded theory study

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Abstract. *Background and aim of the work:* The reasons that condition and motivate adherence to good practices have a multifactorial nature. From the literature review, emerged different elements that interact within the operating context and represent a part of the variables that condition the "Best Practice". The aim of this research was to investigate the variables that influence adherence to operators' good practices. *Methods:* A qualitative study with Grounded Theory (GT) methodology was carried out, which leads to the establishment of a theory about basic social processes. This theory is based on the observation and perception of the social scene and evolves during data collection. Data collection took place through interviews with the participants, through an ad hoc semi-structured interview grid. The initial sampling consisted of 12 health workers, while the theoretical sample was made up of 6 health workers. *Results:* The analysis organization through the creation of schemes and diagrams has allowed to formulate different concepts including: false beliefs, knowledge and emotions experienced, that connect with the initial condition of Unconsciousness unaware; awareness of the consequences, team, welcome the new, which are connected to the intermediate phase of Revolution of the professional oneself; awareness of the limits, culture, responsibility, context, rigor and control that connects to the final state of Attentive Habit. *Conclusions:* The theoretical model develops through a path of growth and revolution that starts from the roots of an Unconsciousness unaware and brings with it the seed of a model. (www.actabiomedica.it)

Key words: HAI management, best practice, grounded theory, health workers

Introduction

The Health-Care-Associated Infections (HAI) represent, worldwide, one of the adverse events considered attributable to the sensitive outcomes of care. In the last decade, literature has presented the relationship between the care quality provided and treatment outcomes, therefore the sensitive care outcomes represent the effect and/or consequences of assistance interventions.

The ECDC Survey estimates that in Europe about 3.2 million patients fall ill due to infections contracted during their stay in health facilities and about 37 thousand of these die due to the consequences related to these infections. Furthermore, the HAI cause 16 million additional hospitalization days with the consequent increase in expenses for a total of 7 billion euros per year (1).

These are enough grounds for healthcare professionals, based on their knowledge and skills, to have a duty of significantly improve the standard of care through "HAI management behavior" (2). However, the good knowledge of the operators regarding the right practices often does not translate into appropriate behaviors in infective risk management.

The motivational factors and the perception of

the work environment that manifest in the set of conditions, influences, forces and cultural values of that environment, constitute a decisive element. The poor implementation of good practices is related to the lack of time and resources, the perception of negativity by other staff members and the stress following interventions (3). This makes clear that knowledge, awareness, control of actions and facilitation is not enough to change the behavior of poor adherence to hand hygiene (4).Literature argues that, to implement the use of the guidelines, it is necessary to create a favorable and positive work environment and promote effective communication between the various team members. The struggling in applying these guidelines in clinical practice, as part of the context of emergency, can be associated to various factors, including an inadequate organizational support activity (5).

Although there has been exponential progress in best practices, health professionals still develop low level of compliance with the standard measures for infection prevention. It seems to be related to individual aspects such as forgetfulness, lack of resources and devices, no retraining, lack of time, distorted cognitions and knowledge, and low risk perception (6). Therefore, the creation of innovative educational strategies that provide for an operators' different approach, promoting a greater awareness of good practices and the knowledge of the infective risk, becomes a necessity, since it has been demonstrated that the professionals who have greater awareness also have more knowledge (7).

The topic of the organization is also relevant regarding the relationship between *burnout* and rate of infections. There seems to be an association between the level of job satisfaction associated with *burnout* and the poor adherence to infection prevention measures, in particular hand hygiene (8, 9). When the organizational culture is positive, i.e., the work environment is safe and non-threatening and its members can talk, take risks related to improvement and are encouraged to express concerns and ideas for improvement, the infection rate is lower (10).

On the same line, the self-regulatory encouragement and management of the own effectiveness and planning capacity seem to have the greatest impact on change (11). Some improvement strategies support this target, such as those based on risk perception and the outcome of expectations. The barrier is the fact of inserting hand hygiene as an integral part of daily activity rather than the technical difficulty performing it. To reduce the risk of hospital infections it is, therefore, required to eliminate the ambiguities in the relationships between health workers and the institution through a compromise between individual responsibilities and the rules of local behavior in different professional fields (12). Self-regulatory encouragement and management of own planning capacity act on change by improving the perception of risk and the outcome of expectations.

A systematic review of the literature showed that interventions based on behavioral constructs (e.g. attitudes, intentions, self-efficacy) are more effective than interventions that only concern knowledge and awareness, while *positive reinforcement,* which is the key concept in the long-term behavioral approach, may prove to be less sustainable (13). It could be said that for a lasting effect, the interventions must go beyond a simple increase of knowledge and the promotion of good behavior, but should also include more organizational, perceptive, socio-cultural, cognitive and psychological determinants. Psychological constructs, such as the locus of control and mental models, seem to play an important role in the perception of the HAIs. This perception could be influenced by the personal tendency towards an "*external locus of control that tends to rationalize the attribution of the own behavior consequences to external causes and therefore not to recognize them as dependent on oneself" (*7).

Finally, another group of researchers considers that the professionals in a work group with a lot of experience, beside of colleagues with good explicit knowledge (codified and written), represented by the scientific research literature, can make a contribution expanding the experience and the professional competence. The results of this study show that tacit knowledge is drawn and integrated at different stages of the public health program planning process (14).

Based on literature, the aim of this research is to investigate how these topics manifest themselves in the health practice of a specific context, what are the reasons that hinder the use of available knowledge, what are the organizational conditions influencing them and

if the organizational structures responsible for HAI management have been implemented. Furthermore, it is claimed to analyze and understand a social phenomenon that occurs when health professionals adhere to good practices by implementing infective risk management behaviors.

Method

Grounded Theory method has been chosen due to the complex nature of the topic and because the research object is a dynamic and fluid process. This method lends itself to the study of situations and experiences in potential change (15).

There are not formal or substantial theories available about good practices in the HAI management, so researchers have intended to take a major vision through their own sensitivity to collect information and capture the main concerns and dynamics in the health workers' work environment. Grounded Theory studies begin with open questions, and researchers presume that they may know not much about the meanings that drive the actions of their participants (16).

This research study aimed to explore the following generating question:

What happen when the health professional stick the best practice of management of the HAI?

Grounded Theory (GT) is a method that allows a theory to emerge from data through a constant comparison of the evidence (17). GT is a general method (a family of methods, ed) of comparative analysis [...] and a set of procedures capable of (systematically) generate a theory based on data (18). This provides for a systematic, but at the same time, flexible process of simultaneous data collection and analysis, which leads to the development of concepts and/or a theory on a given phenomenon (15).

GT transcends description of data to conceptualize substantive ideas. Everything is data, including field work, qualitative or quantitative findings, other relevant literature, and other relevant theories. The wider the spread of data, the richer, more conceptual and more accurate the theory will become (19).

This method draws on different types of sampling: planned *initial sampling*, which consists in the choice of some cases according to the logic of the targeted or purposive sampling (20). And *theoretical sampling*, a particular type of selection of participants built during the research path and in which "the researcher collects new data to verify, saturate and expand theoretical categories" (21).

Memos, as a distinctive feature of the GT, constitute annotations in which the researcher takes the ideas, insights and reflections to elaborate in the various phases of data collection, and which are written immediately after the transcription, to record personal thoughts.

The analysis occurs through *initial coding* that consists in the creation of labels. The researcher reads the transcriptions and underlines groups of words associating them with a label that refers to the meaning of that particular. Subsequently the data is analysed through a *focalized coding,* which has the function of bringing together the labels previously identified after each interview. At the end of the merging, the researcher highlights the encodings that occur more frequently, hypothesizing categories, which must be validated by the subsequent phases. To do this the researcher will use an inductive approach, developing a constant benchmarking process. Another indication is to identify the relationships and structures between the categories and the mapping also through the technique of *messy situational map* (22).

The theoretical sampling phase takes place after the coding of the categories, to complete and reach their saturation. The categories saturation phase indicates the stop point of the process. Some categories can be elevated to an abstract level to form concepts, which can be integrated and linked to formulate the explanation theory of the phenomenon.

Sample

This study began with a purposive sample of health professionals who work in a critical unit of a north Italy public Hospital. The enrolment criteria was: to be a health worker (doctor, coordinator, nurse, social health worker, specialist, student) of the healthcare team analysed or a non-health operator (cleaning, administrative) who were part to the analysed context and agreed to participate in the research.

Data collection took place through interviews to the participants, with an ad hoc semi-structured interview grid, on the basis of analysed literature. The setting was agreed with the participants and an authorization to participate in the study was requested.

The interviews lasted between 30 and 50 minutes and were audio-recorded. The audio recording was transcribed verbatim by a member of the research team. All respondents were asked for the possibility of a second meeting

Data Analysis

The *initial coding* of the first interviews, considered provisional and preliminary, took place thorough the in-depth transcripts reading and underlining groups of words associated with labels, which referred to the meaning of that particular segment. Subsequently, *focused coding* regrouped the previously identified labels after each interview. At the end of the merging, the most frequent encodings were highlighted, suggesting categories, which were validated in the subsequent phases. The following interviews led to the saturation of the categories identified above.

The categorical structure was validated as it proved to be robust (Table 1)

The formulation of the concepts took place through the creation of schemes and diagrams also to organize the most abstract ideas. Some categories have been elevated to concepts, in particular: emotions experienced, team, context and responsibility. Other concepts were formulated starting from reformulation of labels that explain better the concept.

Ethical considerations

The study respected the primary ethical principle of research, i.e., the respect for human dignity. This includes respect for people, attention to their well-being and equity. The study involved a sample of operators giving a semi-structured face-to-face interview. The participants gave their consent to the participation in the study and the processing of personal data after reading an information note.

Results

Sample

The **initial sample** was composed of 12 operators. In particular, 1 nursing coordinator, 6 nurses, 3 doctors, 1 social health worker, 1 external cleaning operator, chosen for convenience. All operators had a rank of service at the Intensive Care Unit for more than 2 years, a chronological age from 31 to 58 and a total rank of over 9 years. The theoretical sample consisted of 6 operators. All operators had rank in the Intensive Care Unit for more than 1.5 years, a chronological age from 26 to 65 and a total rank of above 9 years. The **theoretical sample** was composed by 1 physician, 3 nurses, 1 external cleaning operator, 1 employee (Table 2).

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The model (Figure 1) is characterized by three conditions, that professionals claim to experience in

Table 1. Identified key categories

Category	Definition
Emotions experienced	Operator's emotions and feelings
Team relationship	Relational dynamics between the professionals of the healthcare team
Professional self	Operators' expert professional identity
Professional practice	Operators' activities in the organization
Adherence to good practices	Changes in the behavior of adherence to good practices and methods
Context	The scenario where the actions take place
Responsibility	Accept responsibility for the consequences of the actions

Table 2. Demographic characteristics of study sample. Grey section indicates the theoretical sample.

Id n°	Age	Gender	Profession	Length of service (years)
1	57	F	Cleaning Staff	15
2	48	F	Coordinatore	28
3	38	F	Nurse	14
4	42	M	Physician	16
5	31	F	Nurse	9
6	45	M	Physician	11
7	46	F	Nurse	22
8	36	M	Infermiere	10
9	46	F	Nurse	22
10	51	F	Physician	25
11	58	F	Healthcare Assistant	31
12	40	F	Nurse	22
13	41	F	Cleaning Staff	30
14	38	F	Nurse	10
15	33	F	Nurse	11
16	65	M	Physician	41
17	46	F	Nurse	15
18	26	M	Office Worker	8

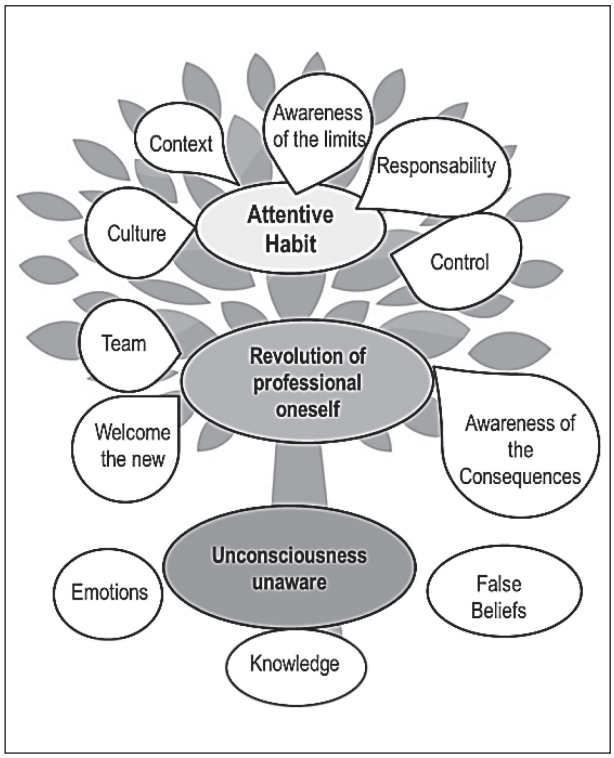

Figure 1. Theoretical Model

the HAI management process and which represent the expression of the evolution and growth process of health workers, allowing their transformation from a condition of seed "unconsciousness unaware", to a condition of "careful habit through a professional and personal revolution", individual and collective.

1.1 Unconsciousness unaware

Their testimony gathers the beginning of a process, of a transformation: "*Then, during the day, I paid more attention…"* and even: *"There is only here and for me it was a discovery ...". "I felt limited"*. The state of "unconsciousness unaware" affects the growth process of the operator; he brings his baggage of "knowledge, false beliefs, emotions experienced" which he must confront with and "sow the seed of good habits".

The concept of **false belief** expresses the ability of some operators, in certain situations, to attribute the causes of the problem to another: *"they are born sterile", "we are experts", "it has always been the other"* and, with the activation of a defence mechanism, self-protection, they justify their behaviour: *"this does not happen", "it is never someone's fault"*.

The concept of **knowledge** reflects the operators' perception about his level of training, sometimes improved simply because he *"increases the experience" "beyond the study"*, in other cases because, followed and properly trained, *"they taught me "*.

The concept of **emotions** is built in a mixture of feelings experienced by the operators during the care activity through which their personality is forged and shaped. A negative experience can determine: *"fear", "anxiety", "scare", "sense of guilt", "bitter taste"*, towards something not much known, causing in the professional *"anger", "insecurity"* and *"shame"* that lead the operator to question himself and a necessity of change. The process leads to the discovery of new solutions and a personal and collective satisfaction. With the implementation of the change, the professional arrives to positive feelings of *"safety", "satisfaction", "discovery"* and *"protection"*.

1.2 Revolution of professional self

The revolution of the professional self is the central part of the process where are highlighted three

concepts that contribute to bend the conditions. The first concept is **"Team"** that involves the system of values, identities, professional status and each professionals' way of working; it is a process of growth, education and continuous learning. A professional said, *"It is not that you put your head in the sand or say… also because the problem is within the group, not individual"*.

The second concept is the **awareness of the consequences** that manifests through reflection on oneself, personal experiences and attribution of a meaning to own actions, to evaluate the ability to perceive and understand events, actions, consequences. About this, a professional said *"for us, infections are fundamental because we have understood something fundamental, the patient can die"*.

Welcome the new, the third concept, is the process of change experienced by professionals, as reported by an interviewed, *"adapting to the evidence has certainly been a great innovation"* and that leads to tangible results and to simplify the work for all members of the team. As reported by a professional *"it has greatly facilitated our work, team work, I guess…"*.

1.3 Attentive habit

The attentive habit is the result of an articulated path. The operators, intended as individuals and then cohesive within the team, mature a sort of modality integrated into their work, generated by various factors among which emerges: **"The Context"** of intensive care. As reported by a professional *"The place makes the mentality... in the consultations those small details perhaps throw a seed and something grows; but I have to say that I only learned it here, unfortunately"*. The **"Responsibility"** of the individual also emerges. A nurse said, *"It had become a fundamental thing, I must say, at least as far as I'm concerned, since then, there has been an important awareness"*, put in place to achieve the outcomes. Another nurse: *"Because then, at a certain point, it also becomes a bit of a personal challenge... because you say: "Ah yes, for that yes... ok, now I have to change gloves... now"*.

It emerges the need to **confront oneself with the own limits**, to have the knowledge of the tools needed for the change and to use every resource available. This process is identified in the individual and in the team as an element of conflict and, at the same time, of growth. As reported by a nurse: *"we had put into practice all we could, also, clearly, informing ourselves with the consultants... and in any case also working with literature... but there was nothing to do ..."*.

The inadequate management of infections, according to the operators, is related to the **culture.** As reported by one of them: *"...and unfortunately I still believe that there is not real culture in the departments"*, *"but why there is not the mentality? is a question of attitude, not time ...because, also, now that I am going down... I am able to pay attention and it costs me very little... now it is a habit, a healthy habit ..."*.

There also emerged the awareness that with **commitment** it is possible to improve or even change the cultural aspects that determine the behaviour of health workers: *"But I think that with the lead, something can be done"*, *"small precautions may throw a seed and something grows"*.

Control and rigor is perceived as a needed motivation to improve the operators' level of attention towards infections related to care: *"Maybe there is less fear now about the judgment of superiors …there might be a higher level with respect to the base"*. The control and rigor exercised between health workers, is perceived as an important element in the formation and maintenance of attentive habit: *"we work a lot in trying to manage the wrong attitudes of others... It is not easy, however, we try"*, *"where you work well, anyway, there is always something to improve for sure, and when there is something that rings a bell, probably something wrong has been done on our side, we question ourselves anyway"*

Discussion of the results

The model has tried to delineate the process that takes place in the operator when he implements good practices. From the data collected it seems that the operator moves from the state of the initial condition of "unconsciousness unaware", influenced by "false beliefs", "knowledge" and "emotions experienced", to "attentive habit" through the "revolution of professional oneself".

The results of the research seem to confirm previous observational studies (7) where there is a close correlation between the awareness of good practices

and the knowledge of infective risk, enough to make the authors conclude that greater awareness produces more knowledge.

Another confirmation highlights a strong motivational need of individuals to strengthen good practices. In fact, despite the high level of standardization of procedures, an internal level of self-regulation, responsibility and 'attentive habit' also emerges. The authors conclude that self-regulation encouragement seem to have-greater impact on change strategies, based on the perception of risk and therefore on the awareness of the consequences (11).

In line with the systematic review previously mentioned, the research data seem to confirm the study of the authors, which admit that, in order to improve adherence to good practices, interventions based on behavioural constructs would appear to be effective above all interventions that concern only the increase of knowledge and awareness. Among the techniques considered effective, the authors attach great importance to spontaneous behaviour, involving non-reflective behavioural responses modelled by the perceptions of the context and the environment, as in the case of careful habit (13).

Some authors have been interested in the theory of habit, emphasizing the importance of establishing automatic associations between behavioural implementation and contextual hints when such behaviours should be implemented as repeatedly stressed by those interviewed in the research. In addition, is highlighted the so called "tacit knowledge", as a facilitator of adherence to good practices and known as field experience (14).

From the literature it also emerges that determinant roles influencing adherence to good practices seem to be the organizational culture that promotes change according to scientific evidence and a thinking culture that promotes and protects through time the temporal resources needed so that change can happen (8).

Conclusions

Research data can explain health workers' adherence to good practices in the case of this critical unit set in a north Italy public Hospital. The results of the research admit the operators' tendency of implementing good practices as a result of an attentive habit, understood as a conscious automatism bound to the culture, the belonging context, control, rigor, awareness of the limits and an increased responsibility for the practice. The habit of good practice seems to be the result of a process that begins in an unconsciousness unaware which grows from false beliefs, inadequate knowledge and strong emotions experienced. Then it finds a transformation through the revolution of the professional self, equally influenced by a strong relationship in the team, the awareness of the consequences and a tendency of the operators to welcome the new members.

Since this is in-depth research, the reported data cannot be generalized and can only concern the studied context, even if the results confirm the main studies traced in the literature on the topic. The study can contribute to a better understanding of the phenomenon of adherences to good practices. It would be interesting, with further research, to investigate the condition of careful habit, trying to understand if this is a static or an ever-changing situation. Future research could therefore investigate the ways in which careful habit is maintained. Further investigation could concern the condition of revolution.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

References

1. European Centre for Disease Prevention and Control (ECDC). ECDC surveillance report: Healthcare-associated infections in Europe 2017. Stockholm: ECDC; 2017. Available from: https://ecdc.europa.eu/en/healthcare-associated-infections.
2. Centers for Disease Control and Prevention (CDC). HAI Progress Report 2014. Washington: CDC; 2014. Available from: https://www.cdc.gov/hai/data/archive/2014-progress-report.html.
3. McAteer J, Stone S, Fuller C, Michie S. Using psychological theory to understand the challenges facing staff delivering a ward-led intervention to increase hand hygiene behavior: A qualitative study. Am J Infect Control 2014; 42: 495-499.
4. Huis A, van Achterberg T, de Bruin M, Grol R, Schoonhoven L, Hulscher M. A systematic review of hand hygiene

improvement strategies: a behavioural approach. Implementation Science 2012; 7: 92.
5. Jun J, Kovner CT, Stimpfel AW. Barriers and facilitators of nurses' use of clinical practice guidelines: An integrative review. Int J Nurs Stud 2016; 60: 54-68.
6. Porto JS, Palucci MH. Reasons and consequences of low adherence to standard precautions by the nursing team. Rev Gaúcha Enferm 2016; 37(2).
7. Taffurelli C, Sollami A, Camera C, et al. Healthcare associated infection: good practices, knowledge and the locus of control in heatlhcare professionals. Acta Biomed Ateneo Parmense 2017; 88: 31-36.
8. Peirson L, Ciliska D, Dobbins M, Mowat D. Building capacity for evidence-informed decision-making in public health: a case study of organizational change. BMC Public Health 2012; 12: 137.
9. Cimiotti JP, Aiken LH, Sloane DM, Wu ES. Nurse staffing, burnout, and health care- associated infection. Am J Infect Control 2012; 40(6): 486-490.
10. Brewster L, Tarrant C, Dixon-Woods M. Qualitative study of views and experiences of performance management for healthcare-associated infections. J Hosp Inf 2016; 94(1): 41-47.
11. Lhakhang P, Lippke S, Knoll N, Schwarzer R. Evaluating brief motivational and self-regulatory hand-hygiene interventions: A cross-over longitudinal design. BMC Public Health 2015; 15(1): 79. doi:10.1186/s12889-015-1453-7.
12. Shah N, Castro-Sanchez E, Charani E, Drumright LN, Holmes AH. Towards changing healthcare worker's behavior: a qualitative study exploring non-compliance through appraisals of infection prevention and control practices. J Hosp Infect 2015; 90: 126-134.
13. Srigley JA, Corace K, Hargadon DP, et al. Applying psychological frameworks of behaviour change to improve healthcare worker hand hygiene: a systematic review. J Hosp Infect 2015; 91: 203-210.
14. Kothari A, Rudman D, Dobbins M, Rouse M, Sibbald S, Edwards N. The use of tacit and explicit knowledge in public health: a qualitative study. Implementation Science; 7: 20.
15. Mortari L, Zannini L. La ricerca qualitativa in ambito sanitario. Carocci, Roma, 2017.
16. Sbaraini A, Carter S M, Evans RW, Blinkhorn A. How to do a grounded theory study: a worked example of a study of dental practices. BMC medical research methodology 2011; 11: 128. doi:10.1186/1471-2288-11-128.
17. Glacer BG, Strauss AL. The discovery of grounded theory. Aldine transaction, New Brunswick, 1967.
18. Tarozzi, M. Che cos' è la grounded theory. Carocci, Roma, 2008.
19. Lewis LF. Caregiving for a loved one with dementia at the end of life: An emergent theory of rediscovering. Am J Alzheimers Dis Other Demen 2015; 30(5): 488-496.
20. Charmaz K. Constructing grounded theory: A practical guide through qualitative analysis. Sage, London, 2006.
21. Charmaz, K. 'Discovering' chronic illness: using grounded theory. Soc Sci Med 1990; 30(11): 1161-1172.
22. Clarke AE. Situational analysis: Grounded theory mapping after the postmodern turn. Thousand Oaks, CA, Sage, 2005.

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Original article: improving healthcare sistemic quality

Case management programs in emergency department to reduce frequent user visits: a systematic review

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Abstract. *Background and Aim:* Inappropriate visits to the Emergency Department (ED) by frequent users (FU) are a common phenomenon because this service is perceived as a rapid and concrete answer to any health and social issue not necessarily related to urgent matters. Could Case Management (CM) programs be a suitable solution to address the problem? The purpose is to examine how CM programs are implemented to reduce the number of FU visits to the ED. *Methods:* PubMed, CINAHL and EMBASE were consulted up to December 2018. This review follows PRISMA guidelines for systematic review, as first outcomes were considered the impact of CM interventions on ED utilization, costs and composition of teams. *Results:* Fourteen studies were included and they showed patients with common characteristics but the FU definition wasn't the same. Twelve studies provided a reduction of ED utilization and seven studies a cost reduction. The main tool used is the individual care plan with telephone contact, supportive group therapy, facilitated contacts with healthcare providers and informatics system for immediate identification. The CM team composition is heterogeneous, even if nurses are considered the most used professional figures. *Conclusions:* In contrast with a standardized method, a customized approach of CM program helps frequent users in finding an appropriate answer to their needs, thus decreasing inappropriate visits to the ED. (www.actabiomedica.it)

Key words: case management, emergency service, patient care planning, vulnerable populations, frequent users

Introduction

Emergency Department (ED) is facing the issues of overcrowding and lengthy waiting times due to a disproportionately elevated number of visits (1, 2). The ED is perceived as a rapid and concrete answer to any health and social issue not necessarily related to urgent matters. Moreover local services are often bypassed because they are perceived as little efficient (3). The visits to the ED for non-urgent matters range between 9% and 54.1% in the USA, between 25.5% and 60% in Canada, and between 19.6% and 40.9% in Europe (4).

Many studies have underlined the presence of frequent users (FU) who often aren't in need of urgent aid and could receive better cares in a different setting compared to that of the ED (1, 3, 5). According to a systematic review carried out in the USA, FUs are identified as patients who visit the ED at least 4 times a year (or 3 times a month) (1). They represent between 4.5% and 8% of the patients who use the pro-

vided service and between 21% and 28% of all the ED medical activity (1). These patients are often defined "vulnerable" patients (6) because they have a low social and economic status (7) and they have difficulties in taking care of themselves independently, especially when complications and exacerbations of their chronic condition arise (8, 9). As a result, non-urgent visits to the ED increase and many healthcare resources are used (5, 10).

To tackle this issue, many healthcare systems are trying to implement new organizational set-ups both in hospitals and territorially (11), among those the Case Management (CM) program (12, 13) which is a collaborative approach used to assess, plan, facilitate and coordinate healthcare related matters (14). It aims at meeting patients' and their families' health needs through communication and available resources, thus, improving individual and healthcare system outcomes (15, 16). The CM can be implemented through programs that include various social activities as well as provide clinical assistance such as the individual care plan (ICP) (17), support group therapy (18), assistance in obtaining stable housing (19), linkage to medical care providers (20, 21) and telephone contact (20, 22).

Aim

The aim of the study is to examine if and how the CM programs are implemented to reduce the number of FU visits to the ED.

Methods

Design

A systematic review was carried out. All types of articles (observational and experimental) in English were considered potentially suitable. PubMed, CINAHL and EMBASE were consulted up to December 2018 and the studies published in the last 10 years were taken into account because this review aimed to explore the current trends. This review was undertaken in accordance with the PRISMA guidelines (23).

Inclusion and exclusion criteria

We included the studies that describe CM intervention, considering FU adult patients who visit the ED for any kind of clinical or social purpose or who are in need of assistance. Limitations concerning sex, ethnicity, co-morbidity or other characteristics were not applied. Studies indicating CM programs which were developed and implemented both by a single professional figure (doctor, nurse, social worker) and by a multidisciplinary team were taken into account. The studies indicating the composition of the CM teams and the patients' medical-nursing pathway were analyzed. Limitations regarding the duration of the program and the implementation modalities were not imposed. As first outcomes of interest, were considered the impact of CM interventions on ED utilization, costs and team composition.

Search strategy

The key terms used in the literature search included: "frequent user*", "frequent attender*", "emergency department*", "Hospital Emergency Service*", "Emergency Unit*", "Accident and Emergency Department", "Emergency Room*", "case management", "case manager", "patient care management".

Search outcomes

Considering the large number of publications resulting from the bibliography search, an evaluation process based on three levels was used. They were: appropriateness of the titles, evaluation of the abstracts and of the full-texts.

Each evaluation level was analyzed separately by two authors who examined all the bibliographic references judging whether they were potentially suitable. The results of each level were compared and a third author solved any disagreement. Figure 1 shows the search strategy flow diagram used to obtain the results.

After having selected the articles that would be included in this research, two of the authors used a standard Excel module to extract the data. Any disagreement which arose during this stage was solved by means of a third author.

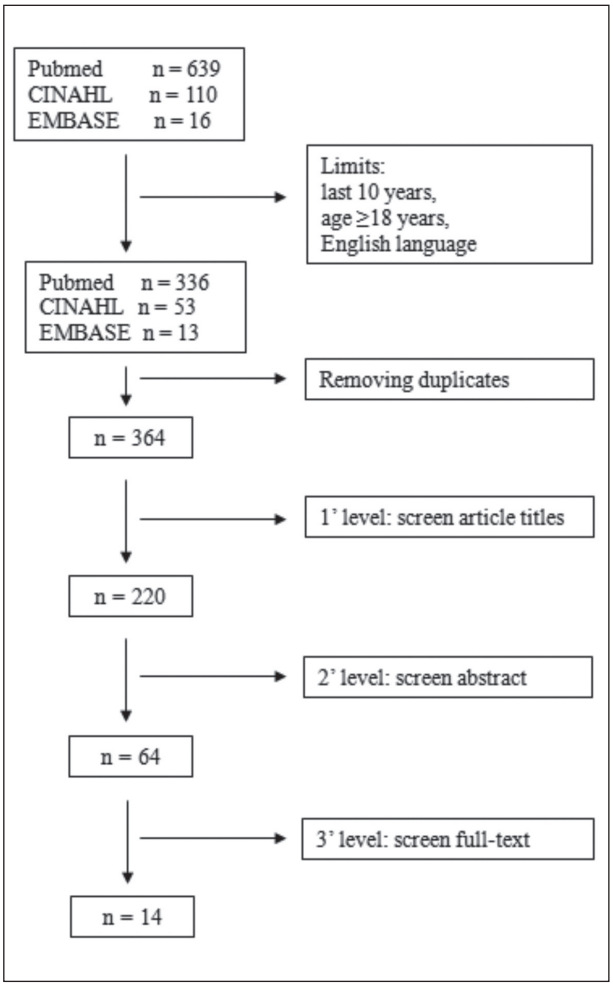

Figure 1. Search and selection flow diagram

Fourteen studies corresponding to the research criteria were found: 7 randomized controlled trials, 4 prospective observational and 3 retrospective observational studies.

Quality appraisal

The quality of the approved studies was assessed by using the CASP checklist (24, 25). This tool is made up of a list of questions. Each question is awarded from 1 to 11 points. The quality of each article was assessed by two authors independently. Any disagreement was dealt effectively through the aid of a third author. The marks of the selected articles were recorded in the last column of Table 1.

Results

The details extracted from the chosen studies were synthesized in Table 1.

The selected studies analyzed 6031 participants undergone CM interventions, the majority were males with mean age 46 years. The study target population was heterogeneous and mainly consisted of people suffering from chronic conditions and socioeconomic issues, such as, for example, alcoholism (26), mental illnesses (26-31), illegal substance use (28, 30-34), homeless status (32, 35), chronic obstructive pulmonary disease (30, 32) and cardiovascular diseases (29, 30). Four studies (29, 33, 34, 36) showed that pain is a frequent reason for patients' ED visits.

Eleven studies gave a precise definition of the amount of annual and monthly visits to the ED that identified the patient as a FU. In the analyzed articles FU are people who visit the ED 5 (26, 27, 31) or 6 (21, 32) or 10 (28, 34) or 12 (33) times or more in a year, 3 (29, 34, 37) times or more in six months, 6 (33) times or more in three months, 4 times or more in a month (33, 34) and 3 (36) times or more in 3 days. These numbers remain unvaried but may be combined in different ways according to the study they are recorded in (33, 34). Two studies (30, 35) did not report a specific metric for frequency of use.

Concerning CM interventions, eight studies (21, 26-28, 30, 33, 34, 36) created ICPs. Four studies (27, 29, 32, 37) recognized the importance of telephoning patients directly, thus, simplifying the course of their treatment. Among these treatments, a study (29) showed that motivational support was given too. Four studies (21, 26, 29, 37) facilitated contacts with healthcare providers and two studies (26, 32) organized group meetings with patients who needed the same kind of treatment. Two studies (30, 33) showed how patients enrolled in CM programs were immediately identified by the computerized system guaranteeing them appropriate treatments. Two studies (27, 31) included home visits and ambulatory care. Two studies (26, 35) guaranteed that homeless people receive an apartment through social services. Only in a study (26) patients were enrolled in treatment pathways defined by other departments.

Analyzing the selected articles, differences among CM team compositions stood out. In seven studies

Table 1. Summary of selected studies (n=14)

AUTHOR (YEAR)	JOURNAL	COUNTRY	TIPE OF STUDY	NUMBER OF ED ACCESS	FREQUENT USERS CHARACTERISTICS	FOLLOW UP	CASE MANAGEMENT TEAM	INTERVENTIONS	MAIN FINDINGS	CASP QUALITY SCORE
Bodenmann et al. (2017)	Gen Intern Med	Switzerland	RCT	≥ 5 in a year	125 patients, male 57.2 %, mean age 48.5 years. Chronic condition, medical co-morbidity or psychiatric illness.	1 year	4 nurse practitioners and 1 chief resident.	ICP, providing intervention in an ambulatory care, hospital or home setting. Telephone contact with case management team.	Reduction of ED access: -19% (P=.048).	10\11
Chiang et al. (2014)	Hong Kong J Emerg Med	Cina	Prospective observational	≥3 visits in 3 days	14 patients, male 78.6%, mean age 44.3 years. Cases were divided into the pain management or chronic disease group according to their chief complaint.	6 months	Physicians, primary care physicians, psychiatrists, social workers and pharmacologists.	ICP dynamically whith internal ED information system.	Reduction of ED access: -58.5% (P=.004).	9\11
Crane et al. (2012)	Am Board Fam Med	USA	Prospective observational	≥ 6 in a year	36 patients, male 55.6%, mean age 34 years. Chronic pain 75%, substance abuse 47%, COPD/asthma 17%, homeless 19%.	1 year	1 family physician, 1 nurse case manager and 2 behavioral health providers.	ICP, group appointment, direct telephone access and sessions with the care manager.	Reduction of ED access per month: ⁻35% (P<.001). Reduction of costs (ED and inpatient) per patient per month: -80% (P<.001).	10\11
Edgren et al. (2016)	Eur J Emerg Med	Sweden	RCT	≥ 3 in 6 month	4273 patients, male 43.6%, mean age 62.5 years. Generalized or unspecific pain diagnosis, hypertension, ischemic heart disease, atrial fibrillation.	2 years	Nurse case manager.	Telephone-based intervention, facilitated contacts with healthcare providers, coached patients' disease selfmanagement and supported interactions with social services.	Reduction of ED access: -14% (P=.007). Reduction of costs per patient per year: -16% (P=.004).	10\11
Grover et al. (2016)	Emerg Med	USA	Prospective observational	≥ 12 in a year ≥ 6 in 3 months ≥ 4 in a month	533 patients, male 32.2%, mean age 42.6 years. Chronic conditions 71.4%, chemical dependency evaluation/drug abuse treatment 30.7%, pain management 25.6%.	From 1 month to 8 years	ED nurse and nurse case manager.	ICP based on chronic medical problems and reasons for repeat ED usage. Patients were "flagged" in the ED information system for immediately identify.	Reduction of ED access per month: -56.5% (P<.001).	10\11
Grover et al. (2018)	West J Emerg Med	USA	Retrospective observational	≥ 10 in a year ≥ 6 in 6 months ≥ 4 in a month	158 patients, male 44.9%, mean age 42.4 years. Substance use 63.5%, pain management 60.4%.	19 months	Registered nurse, emergency physicians, social workers, ED nurses, chemical dependency providers, behavioral health registered nurse, case managers and representatives from local insurance providers.	ICP.	Reduction of ED access: -49% (P<.05). Reduction of costs: -41% (P<.05).	11\11
Moschetti et al. (2018)	Plos One	Switzerland	RCT	≥ 5 in a year	125 patients, male 56%, mean age 46 years. Social difficulty 74,4%, somatic problem 72%, mental health problem 49,6%, risky behavior 30,4%, not having a primary care physician 16%.	1 year	4 nurses and 1 general practitioner.	ICP, providing intervention in an ambulatory care, hospital or home setting and telephone contact with case management team.	No reduction of ED costs: -19% (P=.29).	10\11
Peddie et al. (2011)	N Z Med J	Australia	Prospective observational	≥ 10 in a year	87 patients, male 40%, mean age 35 years. Desease: medical 45%, psychiatric 29%, substance/alcohol abuse 26%.	4 years	Nurse, ED consultant, medical specialists, psychiatric services and social workers.	ICP.	The interventions and the control are infussicient to prove the utility.	10\11
Reinius et al. (2013)	Eur J Emerg Med	Sweden	RCT	≥ 3 in 6 months	211 patients, male 40.3% mean age 62.6 years. Hypertension 26%, ischaemic heart disease 19%, chronic obstructive pulmonary disorders 9%, heart failure 15%, anxiety disorders 9%, generalized or unspecified pain 41%, atrial fibrillation 18%.	1 year	Case management nurses.	Telephone calls: motivational conversations (13%), support for patient self-care (17%), education on basic medical issues (18%), providing contact with counsellors (3%) or social services (5%), providing contacts with primary care physicians (14%) primary care nurses (5%) and help to establish contacts or appointments at other healthcare facilities (15%).	Reduction of ED access: - 20% (P not avaiable). Reduction of costs: -45% (P=.004).	11\11
Sadowski et al. (2009)	Jama	USA	RCT	Not define	201 patients, male 74%, mean age 47 years. Homeless adults with chronic medical illnesses median duration of homelessness of 30 months.	18 months	Social worker whith post-graduate specialization.	Provision of transitional housing and subsequent placement in stable housing.	Reduction of ED access: -24% (P=.03).	10\11
Shah et al. (2011)	Med Care	USA	Retrospective observational	≥ 6 in a year	98 patients, male 59.2%, mean age 46.6 years. Deseases of pancreas 15.56%, asthma 6.67%, Charlson comorbidity index mean 1.4.	2 years	Not identified the professional profiles.	ICP, schedule appointments, arranging for support services, discharge plans and communication with providers.	Reduction of ED access: -32% (P<.001). Reduction of costs per patient per year: -26% (P<.001).	9\11
Shumway et al. (2008)	Am J Emerg Med	USA	RCT	≥ 5 in a year	167 patients, male 75%, mean age 43 years. Mental disorders (22%), injury (16%), diseases of the skin (8%), endocrine disorders (5%), digestive system disorders (5%), respiratory illnesses (5%).	2 years	Nurse practitioner, a primary care physician and a psychiatrist.	ICP, assessment, crisis intervention, individual and group supportive therapy, linkage to medical care providers, referral to services when needed, assistance in obtaining stable housing and income entitlements.	Reduction of ED access: (P=.01) no single number or percentage avaiable. Reduction of costs per patient: (P=.01) no single number or percentage avaiable.	11\11
Stergiopoulos et al. (2017)	Plos One	Canada	RCT	≥ 5 in a year	83 patients, male 47%, mean age 42.7 years. Anxiety disorders 61.5%, mood disorders 63.9%, psychotic disorders 25.6%, substance misuse disorder 53%, personality disorder 25%.	1 year	Not identified the professional profiles.	Home visits, crisis intervention, supportive therapy, practical needs assistance and care coordination, aiming to integrate hospital, community and social care and improve continuity of care.	No reduction of ED access -14% (P=.31).	10\11
Stokes-Buzzelli et al. (2010)	West J Emerg Med	USA	Retrospective observational	Not define	45 patients, male 75%, mean age 48 years. Substance abuse problems 89%, mental illness 72%, various medical co-morbidity as asthma/COPD 44%, hypertension 64%.	2 years	ED attending physician, ED medical social worker, ED mental health social worker, ED psychologist, ED resident, ED clinical nurse specialists and a student healthcare volunteer.	ICP, use of health information technologies and electronic medical record systems for immediately identify.	Reduction of ED access: -25% (P=.046). Reduction of costs per patient per 2 years: -25% (P=.049).	9\11

Legend: COPD chronic obstructive pulmonary disease, ED Emergency Department, ICP individual care plan, RCT randomized controlled trial

(26-28, 30, 32, 34, 36) an actual multidisciplinary team was recognized. It was made up of various professional figures with specific characteristics who collaborated to guarantee that local services took responsibility for ED patients. Three studies (29, 33, 37) deemed professional nurses specialized in CM to be the main CM protagonist. In an article (35) social workers with a post-graduate specialization were considered central in CM, whereas two articles (21, 31) didn't clearly define what kind of professional figure carried out the task but only identified him/her with the Case Manager.

Ten papers showed as main finding the decrease in visits to the ED (from 14% to 58.5%) and in only three studies (28, 29, 31) the results were insufficient to prove this utility. Furthermore, seven studies (26, 29-33, 37) reported a reduction in health costs (from 16% to 80%).

The duration of the most significant follow-up was 2 years (21, 26, 30, 37) followed by 1 year (27, 29, 31, 32). Fewer studies showed 6-month (36), 18-month (35), 19-month (34) and 4-year (28) follow-up periods. Only one study showed a 1-month to 8-year follow-up (33).

Discussion

Despite being a heterogeneous group of patients, the most significant categories of those enrolled are: addiction to illegal substances, mental illness and homeless. These data correspond to the study of Ko et al. (38) and to the systematic review of LaCalle et al. (1).

Concerning the regularity of visits to the ED which identify the FU, findings show that patients who visit the ED ≥5 times a year and ≥3 times in 6 months are the most represented categories; in fact, a definition of a FU varies in the literature (30). It is interesting to note that no study considered patients who visit the ED a minimum of 4 times a year as FUs, moreover, only one study enrolled patients who visited the ED at least 3 times a month (criteria found in the literature regarding the definition of FU patients) (1). Not all the chosen studies used specific FU definitions.

The ICP is the most used tool in answer to the patients' needs. It is based upon the needs that brought each patient to turn to the ED. The ICP has been carried out in different ways: structured telephone calls are deemed of great importance. The reason is simple: telephone calls enable the program to reach people at greater distances; hence, it is possible to guarantee a constant presence even when a physical meeting cannot take place. This reduces the risk of losing patients enrolled in the program to minimum levels (38).

Placing direct telephone calls also enables an immediate access to the National Health System in case of emergency. This could lead to considering direct telephone calls the gold standard of implementation; however, the evidence is still insufficient to judge them as such.

It is relevant to note how an early warning system and a clear communication method were used in two studies among health care suppliers to identify the FU.

Nine studies showed the significance of the roles of nurses working both individually and in a team. The reason could be that they take a holistic responsibility of their patient due to their nature and training.

The study of Shah et al. (21) doesn't specify who the professional case manager is, however it can be assumed it is a nurse due to the tasks he/she carries out. The study of Sadowski et al. (35) underlines the role of social workers defining them a point of reference for patients, since their job is to analyze and deal with homeless patients' needs. Considering this perspective, it is interesting to observe that the outcome of this analysis isn't just the decrease in the number of ED visits but also of the hospital use. This could be explained with a drop in admissions for social reasons, such as the inappropriate admission of a patient as a result of no alternatives as to where he/she should turn to instead.

The study of Moschetti et al. (39) analyzes the costs of the CM program implemented by Bodenmann et al. (27) allowing a more in-depth analysis of costs and interventions.

Limits

Comparing the selected studies is difficult to carry out since said studies are little heterogeneous in terms of number of patients, methods used and FU definitions.

Some of the studies referred to healthcare realities are rather different in relation to organizations, structures and roles according to their country of origin. Hence, considering the composition of the CM teams, some professional figures cannot be compared because they exist only in some health care systems. The selected studies varied in the amount of details given to describe CM interventions making it challenging to assess the intervention scale and intensity.

Most of the studies focused only on one ED and didn't consider whether the patients, both enrolled and not enrolled in CM program, had had further contact with other local EDs.

Conclusion

The review shows that in contrast with a standardized method, a customized CM approach helps FUs in finding an appropriate answer to their needs. The ICP takes patients' individual needs into consideration more than any other tool programming well-aimed interventions with the objective of satisfying them, and consequently, reducing visits to the ED and, in some cases, healthcare costs. The CM process must make use of hospital and territorial services, continuously integrating the medical and the social dimensions. Since FUs are a complex population for EDs, appropriate actions are needed to reduce their access.

Considering the global aging of population and the increase in chronic pathologies health care systems should implement policies of global care of the patient and of his/her family context. The CM can be a tool which should be applied with different methods. It could be desirable to carry out CM models also in the Italian EDs where there are no published studies.

Conflict of interest: None to declare

References

1. LaCalle E, Rabin E. Frequent Users of Emergency Departments: The Myths, the Data, and the Policy Implications. Ann Emerg Med 2010; 56(1): 42-8.
2. Jayaprakash N, O'Sullivan R, Bey T, Ahmed SS, Lotfipour S. Crowding and delivery of healthcare in emergency departments: the European perspective. West J Emerg Med 2009 Nov; 10(4): 233-9.
3. Kumar GS, Klein R. Effectiveness of case management strategies in reducing emergency department visits in frequent user patient populations: A systematic review. J Emerg Med 2013; 44(3): 717-29.
4. Bornaccioni C, Coltella A, Pompi E, Sansoni J. Non-urgent access to care and nurses' roles in the Emergency Department: a narrative literature review. Prof Inferm 2014 Jul-Sep; 67(3): 139-54.
5. Bodenmann P, Velonaki VS, Ruggeri O, et al. Case management for frequent users of the emergency department: study protocol of a randomised controlled trial. BMC Health Serv Res 2014 Jun 17; 14: 264.
6. Bodenmann P, Baggio S, Iglesias K, et al. Characterizing the vulnerability of frequent emergency department users by applying a conceptual framework: A controlled, cross-sectional study. Int J Equity Health 2015; 14(1): 1-10.
7. Van Tiel S, Rood PP, Bertoli-Avella AM, et al. Systematic review of frequent users of emergency departments in non-US hospitals: state of the art. Eur J Emerg Med 2015 Oct; 22(5): 306-15.
8. Klein LR, Martel ML, Driver BE, Reing M, Cole JB. Emergency Department Frequent Users for Acute Alcohol Intoxication. West J Emerg Med 2018 Mar; 19(2): 398-402.
9. Soril LJ, Leggett LE, Lorenzetti DL, Noseworthy TW, Clement FM. Reducing frequent visits to the emergency department: a systematic review of interventions. PLoS One 2015 Apr 13; 10(4): e0123660.
10. Kuek BJW, Li H, Yap S, et al. Characteristics of Frequent Users of Emergency Medical Services in Singapore. Prehospital Emerg Care 2018 Aug; 1.10.
11. Carli A, Moretti F, Giovanazzi G, et. al. "Should I stay or Should I go": patient who leave Emergency Department of an Italian Third-Level Teaching Hospital. Acta Biomed 2018 Oct 8; 89(3): 430-436.
12. Hudon C, Chouinard M-C, Lambert M, Dufour I, Krieg C. Effectiveness of case management interventions for frequent users of healthcare services: a scoping review. BMJ Open 2016; 6(9): e012353.
13. Soril LJ, Leggett LE, Lorenzetti DL, Noseworthy TW, Clement FM. Reducing frequent visits to the emergency department: a systematic review of interventions. PLoS One 2015 Apr 13; 10(4): e0123660.
14. Alfieri E, Ferrini AC, Gianfrancesco F, et. al. The mapping competences of the nurse Case/Care Manager in the context of Intensive Care. Acta Biomed 2017 Mar 15; 88(1S): 69-75.
15. Huntley AL, Thomas R, Mann M, et al. Is case management effective in reducing the risk of unplanned hospital admissions for older people? A systematic review and meta-analysis. Fam Pract 2013; 30(3): 266-75.
16. Thoma JE, Waite MA. Experiences of nurse case managers within a central discharge planning role of collaboration between physicians, patients and other healthcare profes-

sionals: A sociocultural qualitative study. J Clin Nurs 2018 Mar; 27(5-6): 1198-208.
17. Newton A, Sarker SJ, Parfitt A, et al. Individual care plans can reduce hospital admission rate for patients who frequently attend the emergency department. Emerg Med J 2011; 28: 654-657.
18. Okin RL, Boccellari A, Azocar F, et al. The effects of clinical case management on hospital service use among ED frequent users. Am J Emerg Med 2000; 18(5): 603-8.
19. Malte CA, Cox K SA. Providing intensive addiction/housing case management to homeless veterans enrolled in addictions treatment: A randomized controlled trial. Psychol Addict Behav 2017; 31(3): 231-41.
20. Rivera D, Shah R, Guenther T, et al. Integrated community case management (iCCM) of childhood infection saves lives in hard-to-reach communities in Nicaragua. Rev Panam Salud Publica-Pan Am J Public Heal [Internet]. 2017; [cited 2018 May 8] 41(iCCM):10. Available from: https://scielosp.org/scielo.php?script=sci_arttext&pid=S1020-49892017000100226&lng=en&nrm=iso&tlng=en
21. Shah R, Chen C, O'Rourke S, Lee M, Mohanty SA, Abraham J. Evaluation of care management for the uninsured. Med Care 2011 Feb; 49(2): 166-71.
22. Kivelitz L, Kriston L, Christalle E, et al. Effectiveness of telephone-based aftercare case management for adult patients with unipolar depression compared to usual care: A randomized controlled trial. PLoS One 2017; 12(10): 1-15.
23. Moher D, Shamseer L, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. Syst Rev 2015 Dec; 4(1): 1.
24. Critical Appraisal Skills Programme. CASP Case Control Study Checklist [Internet]. 2018 [cited 2018 Jun 1]. Available from: https://casp-uk.net/casp-tools-checklists/
25. Critical Appraisal Skills Programme. CASP Randomised Controlled Trial Checklist [Internet]. 2018 [cited 2018 Jun 1]. Available from: https://casp-uk.net/casp-tools-checklists/
26. Shumway M, Boccellari A, O'Brien K, Okin RL. Cost-effectiveness of clinical case management for ED frequent users: results of a randomized trial. Am J Emerg Med 2008; 26(2): 155-64.
27. Bodenmann P, Velonaki V-S, Griffin JL, Baggio S, Iglesias K, Moschetti K, et al. Case Management may Reduce Emergency Department Frequent use in a Universal Health Coverage System: a Randomized Controlled Trial. J Gen Intern Med 2017; 32(5): 508-15.
28. Peddie S, Richardson S, Salt L, Ardagh M. Frequent attenders at emergency departments: research regarding the utility of management plans fails to take into account the natural attrition of attendance. N Z Med J [Internet]. 2011 Mar [cited 2018 Jun 7];124(1331):61–6. Available from: http://www.nzma.org.nz/journal/124-1331/4581/
29. Reinius P, Johansson M, Fjellner A, Werr J, Öhlén G, Edgren G. A telephone-based case-management intervention reduces healthcare utilization for frequent emergency department visitors. Eur J Emerg Med 2013; 20(5): 327-34.
30. Stokes-Buzzelli S, Peltzer-Jones JM, Martin GB, Ford MM, Weise A. Use of health information technology to manage frequently presenting emergency department patients. West J Emerg Med [Internet]. 2010 [cited 2018 Jun 7]; 11(4): 348-53. Available from: https://escholarship.org/uc/item/9gw5t63j
31. Stergiopoulos V, Gozdzik A, Cohen A, et al. The effect of brief case management on emergency department use of frequent users in mental health: Findings of a randomized controlled trial. PLoS One 2017 Aug 3; 12(8): e0182157.
32. Crane S, Collins L, Hall J, Rochester D, Patch S. Reducing Utilization by Uninsured Frequent Users of the Emergency Department: Combining Case Management and Drop-in Group Medical Appointments. J Am Board Fam Med 2012; 25(2): 184-91.
33. Grover CA, Crawford E, Close RJH. The Efficacy of Case Management on Emergency Department Frequent Users: An Eight-Year Observational Study. J Emerg Med 2016; 51(5): 595-604.
34. Grover CA, Sughair J, Stoopes S, et al. Case Management Reduces Length of Stay, Charges, and Testing in Emergency Department Frequent Users. West J Emerg Med 2018; 19(2): 238-44.
35. Sadowski LS, Buchanan D. Effect of a Housing and Case Management Program on Emergency Department Visits Homeless Adults. Jama 2009; 301(17): 1771-8.
36. Chiang C, Lee C, Tsai T, Li C, Lee W, Wu K. Dynamic Internet-Mediated Team-Based Case Management of High-Frequency Emergency Department Users. Hong Kong J Emerg Med 2014 May 11; 21(3): 161-6.
37. Edgren G, Anderson J, Dolk A, et al. A case management intervention targeted to reduce healthcare consumption for frequent Emergency Department visitors. Eur J Emerg Med [Internet] 2016 Oct; 23(5): 344-50.
38. Ko M, Lee Y, Chen C, Chou P, Chu D. Prevalence of and predictors for frequent utilization of emergency department: A population-based study. Med (United States). 2015; 94(29): 1-9.
39. Moschetti K, Iglesias K, Baggio S, Velonaki V, Hugli O, Burnand B, et al. Health care costs of case management for frequent users of the emergency department: Hospital and insurance perspectives. PLoS One 2018 Sep 24; 13(9): e0199691.

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The midwifery-led care model: a continuity of care model in the birth path

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Abstract. *Background and aim of the study:* The birth path is affected by a fragmentation in the patient care process, creating a discontinuity of this last one. The pregnant woman has to interface with many professionals, both during the pregnancy, the childbirth and the puerperium. However, during the last ten years, there has been an increasing of the pregnancy care operated by the midwife, who is considered to be the operator with the right competences, who can take care of every pregnancy and may avail herself of other professionals' contributions in order to improve the outcomes of maternal and neonatal health. *Aim:* To verify whether there are proofs of effectiveness that support the *caseload midwifery care* model, and if it is possible to apply this model in the birth path in Italy. *Methods:* A revision of literature has been done using some search engine (Google, Bing) and specific databases (MEDLINE, CINAHL, Embase, Home - ClinicalTrials.gov). There has also been a consultation of the Italian regulations, the national guidelines and the recommendations of WHO. *Results:* The search string, properly adapted to the three databases, has given the following results: MEDLINE 64 articles, CINAHL 94 articles, Embase 88 articles. From this selection, 14 articles have been extracted: 1 systematic review, 3 controlled random trial, 7 observational studies, 3 qualitative studies. *Conclusions:* The caseload midwifery care seems to be an effective and reliable organisational/caring method. It responds to the criterions of quality and security, to the needs of women not only during the pregnancy but also during the post-partum phase. For these reasons, it seems very useful also for the birth path in the Italian reality. (www.actabiomedica.it)

Key words: midwifery, caseload, birth path, autonomy, continuity of patient care

Introduction

The World Health Organization has identified the improvement of the quality of life of the mother and child as one of the world-wide priority health objectives. It recommends that assistance at the birth path guarantees to mother and child in perfect health with the level of care as low as possible compatible with safety (1). In the last ten years there has been a growing appreciation of pregnancy assistance by the midwife, as the professional who possesses the best skills (2) to assist pregnancy, childbirth, the puerperium and the low risk newborn. The midwife's professional work also makes use of the contribution of other professionals to improve both maternal and neonatal health outcomes. In fact, the identification of a pathological condition requires the intervention of the physician as a consultant. It is therefore necessary that good communication and interaction between midwife and physician be established, to schedule an assistance plan (3).

The recent popularity of the care model based on therapeutic continuity has raised some questions

regarding the reliability of the midwifery led model, which, according to the indications of the National Committee of the birth path (4), should guarantee quality and safety criteria and improve continuity of care, alongside traditional care models. The National Birth Program Committee has in fact forwarded to the different regions the Guidelines (5-6) for definition and organization of autonomous assistance by midwives to low-risk pregnancies (7). Then the Committee that supports the Regions in the construction of the new network of birth points has promoted organizational guidelines for the provision of care models for low risk women with pregnancy, childbirth and puerperium.

An excellent example is the one given by the Emilia Romagna Region which recognizes the autonomy of the midwife for taking charge of pregnant women at low risk and post-birth. The resolution of the regional council of the Emilia Romagna Region (8) recognizes in fact that the midwife can take charge of pregnancy, childbirth and puerperium at low risk as a competent professionals and guarantor of the promotion and respect of physiology.

Even the Objective Maternal-Child Project (3) sees in family counselling centres and in midwives a central role for the management of the physiological pregnant woman. Also the agreement signed by the Health Ministry in 2010 between the Government, the Regions and the autonomous provinces of Trento and Bolzano on the document concerning "Guidelines for the promotion and improvement of quality, safety and appropriateness of welfare interventions in the path birth and for the reduction of caesarean section "gave the start to an appropriate reorganization of the network of birth points (5).

A year later, Guidelines are produced for assistance with physiological pregnancy (6), which, in addition to giving important information to women and professionals about the most appropriate treatments in distinct circumstances during pregnancy, specifically considers the organization of care with an assessment of the effectiveness of continuity. Haggerty and Coll. (9) summarize the continuity reported in the literature in three levels: the continuity of information (physical and emotional anamnesis must be available and known to all operators), the continuity of care (consistency of care), the relational continuity (knowing who assist, not changing operators over time, ensuring that there are not too many people present).

The emphasis is therefore placed on the continuity of care linked to health outcomes, maternal satisfaction and the reduction of the use of medical procedures, such as epidural, induction / acceleration of labor, episiotomy and neonatal resuscitation. This perspective therefore promotes organizational and welfare models in which pregnancy, childbirth and puerperium and low-risk newborns are managed independently by obstetric personnel, also because that the birth event is, in most cases, physiological,

In Italy, these organizational models, already present in some Regions, are in reality very limited and implemented with fragmented methods. In particular, if in some healthcare companies' areas with complete management of the midwife can be found, within the operative obstetrics units, these organizational models are nevertheless affected by a limited continuity of care so that women are assisted at the end of the pregnancy and they take advantage of the midwife limitedly to the moment of the birth and to the days of admission to the hospital. Home puerperium is sometimes not really expected. It follows that the birth path is affected by a fragmentation in the assistance process, creating a welfare discontinuity. The pregnant woman finds herself interfacing with various professionals both during pregnancy, childbirth and the puerperium.

This can also be attributed to the fact that in Italy, during the last decades, a clinical/organisational model has been promoted. It is mainly based on the contrast of low-risk factors and on the technological approach to obstetric pathology. This model, while positively influenced the rate of morbidity and maternal infant mortality, over time has determined an approach sometimes excessively medicalized to the birth path.

The international scene is more varied. In many industrialized countries, midwives are considered to all effects the figures of reference for pregnant women (midwifery-led care model), while in other countries, it is the gynaecologists who hold the responsibility for assistance (medical-led care model). In other cases, finally, the responsibility for assistance is shared between these professionals (shared care model). The countries that have more than others implemented the

midwifery-led care model are Canada (10), Australia (11), United Kingdom and Sweden (12), Netherlands and Norway (13), and Denmark (14).

This model can be explicated through the case loading or the midwives' team. The case loading is based on the fact that a midwife takes care of a defined number of pregnancies per year; a group of clients that will be followed during all the pregnancy and even during the delivery and the puerperium. In order to organize rest periods and the absences for the holidays, this midwife will be exchanging with a substitute. The caseload midwifery care model has been theorized and promoted by Gaskin (15) also, who reported the obstetrics and the home births to the forefront of modern society. For what concerns the team organization, a midwife takes care of a determined woman's health, even if another midwife of the team takes care of the woman anyway. Generally, teams are composed of five or six midwifes, as described from Dawson and Coll. (16). It is evident that this model is not only focused on the caring process based on the obstetric risk, but also on the continuity of patient care understood as a continuum of delivery and support throughout the birth path.

Aims

The purpose of this study was to explore the skills of the continuity care of patient operated by the midwife and to research the evidences that support such model.

In particular, the aim was to verify whether there are efficacy trials that support the caseload midwifery care model. The questions that have guided this work are the following: Is the midwifery-led care model a safe caring model based on the evidences? Is the continuity of care provided by the midwife during pregnancy and childbirth as safe as the one provided by physicians or multi-professional teams? Is it therefore possible to propose its implementation in the obstetric units in Italy?

The second aim was to explore evidence of customer satisfaction with the midwifery-led care model, and to verify also the satisfaction from the midwives who are part of a midwifery-led care model, in terms of job satisfaction and of a good balance between private and professional life.

Method

In order to answer the research questions, a literature review was carried out by means of a strategy to find evidence of the effectiveness of a project managed independently by midwives, on a care model for pregnancy, delivery, puerperium and low-risk infants.

It was chosen to use some search engines (Google, Bing), specific databases (MEDLINE, CINAHL, Embase), and a database dedicated to clinic trials (Home – ClinicalTrials.gov).

A search string containing the following terms and limits was generated: ("Midwifery" [Mesh] AND "Continuity of Patient Care" [Mesh] OR Midwifery Led Model.

Research focused on the most recent publications (from 2016 to the end of 2018). It was decided to set the starting point of the time limits of the research to 2016 as it dates back to that year a Cochrane review of Sandall and Coll. titled "Midwife-led continuity models versus other models of care for childbearing women" (11).

The search string, appropriately adapted to the three databases used, has given the following results: MEDLINE 64 articles, CINAHL 94 articles, Embase 88 articles.

The difference in the number of the results resides, particularly for CINAHL, in the inclusion of editorials, articles or publications produced by Professional Association, business organisation, not indexed newspaper articles or brochures dedicated to the patients or to the sanitary operators. The inclusion criterions of the publications have been the following: systematic revisions, observational and/or experimental studies, qualitative studies concerning the patients' and/or the operators' satisfaction, descriptive and transversal studies. The exclusion criterions of the publications have been the following: case report, studies made in developing countries or in rural realities.

As a result, priority has been given to experimental studies and systematic reviews, while studies in countries where socioeconomic resources are modest have been excluded, because the organisation of case-

loads is completely different and the results of the intervention can be distorted by disadvantaged sanitary conditions. The editorial articles, the announcements of the business organizations and the case reports, even if interesting, do not give a measurable result, and for that reason they were not chosen. Even the articles lacking in abstracts were discarded. From the initial selection were then included in the review 14 articles of which: 1 systematic review, 3 randomised controlled trials, 7 observational studies, 3 qualitative studies.

Table 1. Flow chart diagram

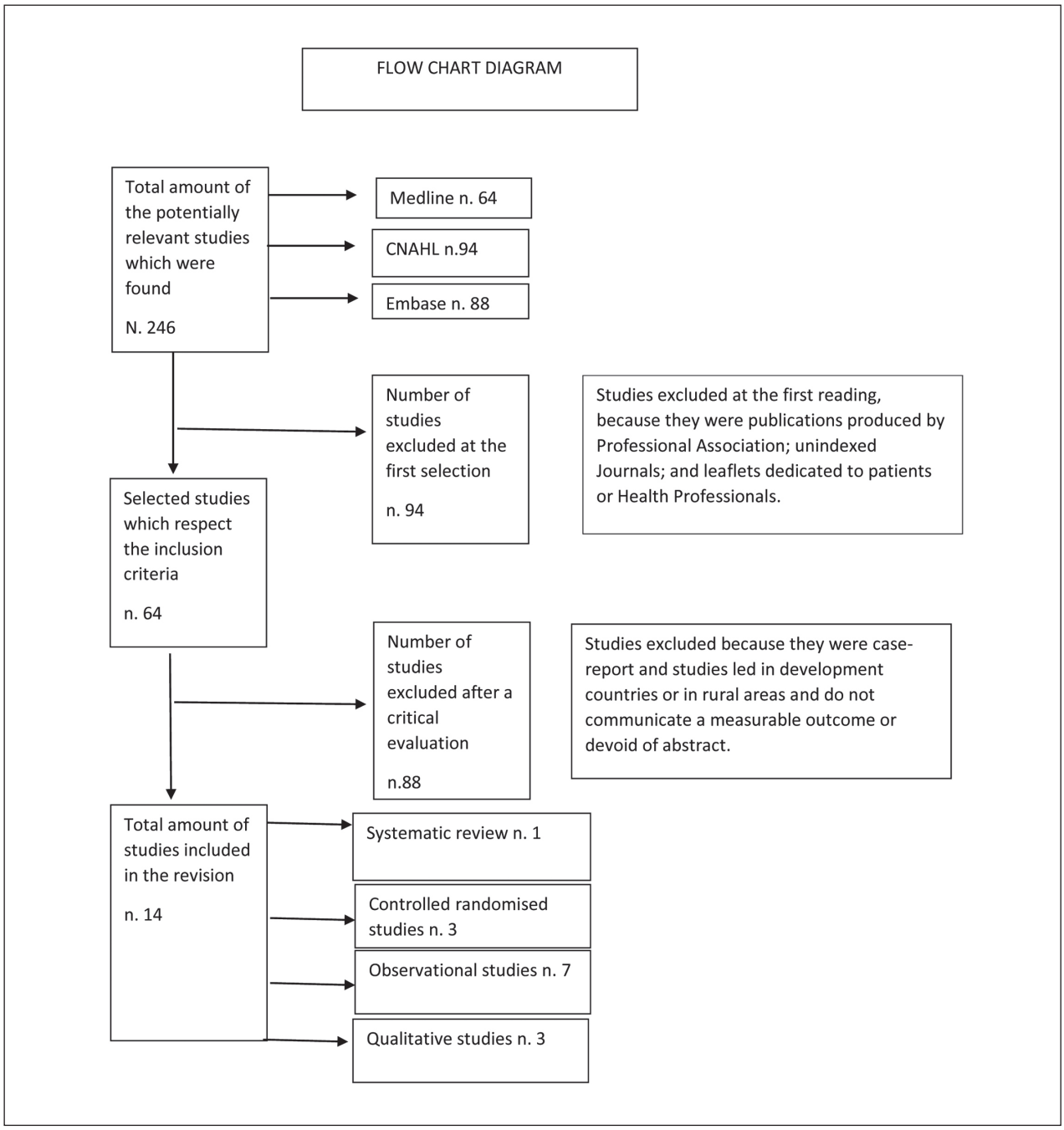

Table 2- Table of the items included in the revision

		Summary table of the items included in the revision						
ID	**Authors**	**Title Journal Years**	**Typology**	**Aims**	**Partecipants**	**Procedure / instruments**	**Results**	**Discussions**
1	Sandall J, Soltani H, Gates S, Shennan A, Devane D.	Midwife-led continuity models versus other models of care for childbearing women. Cochrane db syst rev 2016	Systematic review	A comparison between models of continuity of care offered by the midwives and other models of assistance for pregnant women.	17,674 pregnant women	15 controlled randomized trials led in Australia, Canada, Ireland and United Kingdom	Primary outcome in the midwife led model is a less presence of: analgesia (epidural/spinal), operative vaginal birth (forceps/vacuum), preterm birth, neonatal losses. Women assisted by a midwife have more often a spontaneous birth	The two outcomes 'Womens' satisfaction' and 'cost-effectiveness comparison' of the midwife- led model are defined and measured in a different way among the various studies; this does not allow to provide a synthetic esteem of the effect
2	Wernham E ,Gurney J,StanleyJ, Loschmann L.E, Sarfati D.	A Comparison of Midwife-Led and Medical-Led Models of Care and Their Relationship to Adverse Fetal and Neonatal Outcomes A Retrospective PLos med 2016	Retrospective panel study	A comparison between midwife and medical care models and their relationship with fetal and neonatal outcomes	244,047 pregnanciesn: 223,385 of pregnan women (91.5%) assisted with the midwife led care and 20,662 (8.5%) with the medical led care	After an examination of the datas of term births, more adverse outcomes for the newborns were shown in women who were supported by midwives rather than in women supported by physicians, in New Zealand	They have shown that some perinatal outcomes are less favourable for the group of women assisted by midwives	Authors conclude that it hasn't been possible to determine in a definitive way if an assistential model was related to fewer neonatal deaths; medical-led care was associated with less neonatal deaths
3	Farquhar, Cynthia , McCowan, Lesley , Fleming, S	Letter to the editor PLos med 2016	Retrospective panel study	A comparison between Midwifery-led model versus other models	Disadvantaged prengnant women, different ethnic groups, residing in rural and remote areas	The authors have seen the births' results in women who have been taken care of by midwives and have compared them to those who went to physicians and private midwives, who ask for a payment for the service	Selected C-sections for medical patients is around 32.8%, those for the midwife assisted patients is around 7.4%	The collection of the data such as perinatal mortality and NICU hospitalisations is not well specified, some data base may provide untrue data.
4	McLachlan HL, Forster DA, Davey MA, Farrell T, Flood M, Shafiei T Waldenström U.	The effect of primary midwife-led care on women's experience of childbirth: Results from the COSMOS randomised controlled trial', Bjog-int j obstet gy 2016	Randomized controlled trial	Determine the effect of midwife-guided primary care on women's birth experiences	2314 low-risk pregnant women	Postal questionnaire sent 2 months after the delivery. Melbourne, Australia	Women in caseload were more positive towards the delivery experience compared to those in standard care. They said that during labour they felt more proud of themselves and less anxiou	Compared with standard maternity care, caseload midwifery care may improve women's experiences of childbirth
5	Forster DA, Davey MA, Biro M A, Farrell T, Gold L, Flood M, Shafiei T, Waldenströ U.	Continuity of care by a primary midwife (caseload midwifery) increases women's satisfaction with antenatal, intrapartum and postpartum care: results from the COSMOS randomised controlled trial. BMC Pregnancy and Childbirth 2016	Randomized controlled trial	Investigates the degree of satisfaction of women in the assistance provided in the caseload compared with that one provided in standard care during pregnancy, childbirth and puerperium	2314 women were randomized: 1,156 to loading care and 1,158 to standard care	Questionnaire sent to women who have given birth in Royak Women's Hospitsl, Melobourne, Australia	The assistance provided in the caseload compared to the one provided in the standard care was associated to a major grade of satisfaction about the assistance during pregnancy, delivery, hospitalised/home puerperium	The limit of the study is that it was an esperimentation on low risk English speaker women at the time of the booking for the pregnancy
6	Allen J, Kildea S, Hartz DL, Tracy M, Tracy S	The motivation and capacity to go "above and beyond": Qualitative analysis of free-text survey responses in the M@NGO randomised controlled trial of caseload midwifery Midwifery 2017	A randomised, uncontrolled, parallel group multi-site trial	Discover if women assigned to caseload care describe their midwife differently than those assigned to standard care.	1748 pregnant; 871 in the case of midwives and 877 in standard care	Postnatal survey 6 weeks post-partum; they were thematically analised. The study was led in two academic hospitals in Australia	The answer rate to the survey was around 52% (n = 901). The interviewed people of both groups have described midwives as competent and kind	These concepts highlight some of the active factors which have moderated or mediated the effects of the midwifery care in the process of M@NGO
7	Jepsen I, Mark E, Foureur M, Nøhr EA, Sørensen EE.	A qualitative study of how caseload midwifery is experienced by couples in Denmark. Women and birth 2017	Qualitative study	Explore and elaborate the experiences of women and their partners assisted by midwifes	10 couples	Interviewed ten couples who were observed from the beginning of labour until birth, in Denmark	From the point of view of women and their partenrs, having a midwife meant being recognised and treated as individuals, working as a team	One drawback of caseload midwifery was that the woman risked to be disappointed if her expectations of having a known midwife at birth were not fulfilled

(continued)

Table 2 ***(continued)*** - Table of the items included in the revision

8	Jepsen I, Mark E, Nøhr EA, Foureur M, Sørensen EE.	A qualitative study of how caseload midwifery is constituted and experienced by Danish midwives Midwifery 2016	Qalitative study	Deepen the knowledges on the working and living conditions of midwives in the caseload and on how this model of assistance is is funcional in a hospital obstetrics unit.	13 midwives working in the prenatal clinic	Observations followed by interviews in Denmark	High quality assistance produces a high job satisfaction. The disadvantages of midwives' personal lives are counterbalanced by the feeling of doing a meaningful and important job.	The organisation of the job seems quite demanding and for this reason mifwives have shared their uncertainties on the organisation of their private life, especially those who have little children.
9	Newton MS , McLachlan HL , Forster DA , Willis KF	Understanding the 'work' of caseload midwives: A mixed-methods exploration of two caseload midwifery models in Victoria, Australia Women and birth 2016	Qualitative study	Explore the opinions and experiences of caseload midwives and those working in standard care	288 midwifers caseload interviewed after six months and 323 after two years.	Midwives' interviews were deepened six months and two years after starting the job, Victoria, Australia	The results of the survey reflects that midwives perceive themselves as "true midwives", despite the big load of responsabilities	Probably, further studies will be necessary in order to better analize the caselo midwives outcomes
10	Jepsen I, Juul S, Foureur M, Sørensen EE, Nøhr EA	Is caseload midwifery a healthy work-form? – A survey of burnout among midwives in Denmark. Sexual and Reproductive Healthcare 2017	Study of planning and setup	To investigate the level of burnout among midwives working in the caseload compared to other midwifery care models.	61 midwives	The Copenhagen Burnout Inventory was used in order to measure the burnout amongst midwives working in a third level maternity Unit in Denmark	The answering rate was around 82%. Midwives in Denmark don't feel like having a high level of burnout compared to Sweden and Australia	The results are valid for this Maternity Unit, but the results are difficult to generalize to other contexts
11	Perdok H, Jans S, Verhoeven C, van Dillen J, Batenburg R, Mol BW, Schellevis F, de Jonge A.	Opinions of professionals about integrating midwife- and obstetrician- led care in the Netherlands. Midwifery 2016	Descriptive study	Investigates the opinions of professionals regarding the integration of the two models	400 midwives and 942 doctors	A questionnaire sent online to midwives and physicians in the Netherlands	The interviewed have agreed that there are conflicted interests related to the payment matter, which represents a possible obstacle to the integration for the maternity assistance	To change the maternity care system, an implementation strategy should be chosen that accounts for differences in interests and opinions between professionals
12	Perdok H, Jans S, Verhoeven C, Henneman L, Wiegers T, Willem Mol B, Schellevis F, de Jonge A.	Opinions of maternity care professionals and other stakeholders about integration of maternity care: a qualitative study in the Netherlands. BMC Pregnancy Childbirth 2016	qualitative study	To deepen the opinions of professionals on the integration of midwife-led care	21 partecipants: stakeholder, midwives, physicians	17 interviews, 4 focus group, 2 of which were online in the Netherlands	Three main themes were identified with regard to integrating maternity care: client-centred care, continuity of care and task shifting between professionals. Participants considered the current payment structure an inhibiting factor, whereas a new modified payment structure based on the actual amount of work performed	Important factors for a successful implementation of integrated maternity care are an appropriate payment structure and maintenance of the autonomy of professionals
13	Dawson K, McLachlan H, Newton M, Forster D.	Implementing caseload midwifery: Exploring the views of maternity managers in Australia - Anational cross-sectional survey. Women Birth 2016	Descriptive study	To explore the workload of the midwife in the Australian public maternity system	253 Australian managers	An online cross-sectional survey on maternity managers of public hospitals which offers birthing services all over Australia	63% (149/235) of participants were from metropolitan, regional and remote areas, and from hospitals with very small to very large birth numbers. Only 31% reported that their hospital offers caseload midwifery, and an estimated 8% of women received midwifery caseload care	Although the number of services offering caseload midwifery care has increased nationally, access remains relatively limited
14	Cummins AM, Denney-Wilson E, Homer CSE.	The mentoring experiences of new graduate midwives working in midwifery continuity of care models in Australia. Nurse Educ Pract 2017	Qualitative descriptive study	To explore mentoring experiences of newly graduated midwives who worked in obstetrics care models	13 newly graduated midwives	Semi-structured interviews were mainly held by phone or Skype with only two face to face interviews in Australia	Having a mentor was important, knowing they could call their mentor at any time helped them in transitioning from student to midwife	With the expansion of midwifery continuity of care models in Australia, mentoring should be used as a precious source for midwives in transition

Results

Of the 14 studies selected, two deserve special attention in addition to the previously mentioned study by Sandall J and Coll. (11) and by Wernham and Coll. (17) because they directly address the health outcomes of patients and infants that have been followed by Midwife-led continuity models. The remaining articles propose qualitative and quantitative studies of the led-care midwifery versus other models, perceived from the customers or the midwives, or studies on the organizational modalities of the caseload. The systematic review of "Midwife-led continuity models versus other models of care for childbearing women" by Sandall and Coll. (11) provides an exhaustive summary of the best clinical situation available, comparing different welfare models. The first concerns assistance based on midwifery, which deals with the planning, organization and delivery of assistance to the pregnancy from the initial visit to the postnatal period with medical staff advice when appropriate. This is the care model in teams, where women are followed by a group of midwives (usually 6 or 7) who can alternate with each other. A woman may receive assistance during pregnancy, during childbirth and after childbirth from different midwives. The second model takes into account the assistance offered by a gynecologist obstetrician during the pregnancy and the birth (not necessarily the same professional), while nurses and midwives take care of intra-partum and postnatal patient care under medical supervision. The third examines the assistance provided by the general practitioner, who refers to the obstetrician if necessary. Nurses and midwives involved in intra-partum care and immediately after childbirth have no power of decision and a physician is present at the time of childbirth. In shared care, responsibility for the organization and delivery of care, from initial to post-partum visit, is shared among several health professionals. The revision consists of 15 randomized controlled trials (n= 17674 women), carried out in Australia, Canada, Ireland, United Kingdom, so within systems of health assistance financed by public money. It summarized in a critical way the studies on the efficacy of the model of continuous assistance offered by midwives (in caseload or in team) compared with standard models. Within the primary outcomes we can observe a minor frequency of regional analgesia (epidural/ spinal analgesia): 14 trials, n=17674; related risk (RR): 0.85; usually defined as 95% confidence interval (RC 95%): 0.78, 0.92; operative vaginal delivery (forceps/ vacuum): 13 trials, n= 17501; RR: 0.90; RC 95%: 0.83, 0.97; preterm delivery: 8 trials, n= 13238; RR: 0.76; RC 96%: 0.64; fetal loss/ neonatal deaths: 13 trials, n= 17561; RR: 0.84; RC 95%: 0.71, 0.99. Women assisted by a midwife are also more likely to have a spontaneous birth: 12 trials, n = 16687; RR: 1.05; IC 95%: 1.03, 1.07.

Within the secondary outcomes taken in consideration it appeared that in the model centered on the midwife there are less frequently amniorexi (4 trials, n =3253; RR: 0.80; RC 95%: 0.66, 0.98), episiotomy (14 trials, n= 17674; RR: 0.84; RC 95%: 0.77, 0.92), fetal loss/neonatal deaths before 24+0 weeks (11 trials, n= 15645; RR: 0.81; RC 95%: 0.67, 0.98) and, on the contrary, less recourse of analgesia/anesthesia during labour (7 trials, n= 10499; RR: 1.21; RC 95%: 1.06, 1.37); major average duration of labour (3 trials, n= 3328; average difference in hours: 0.50; RC 95%: 0.27, 0.54) and major probability of being assisted during delivery by a known professionals' (7 trials, n= 6917; RR: 7.04; RC 95%: 4.48, 11.08).

No differences were seen in terms of percentage of C-sections, complete perineum, prenatal recoveries, pre-delivery hemorrhages, inductions, use of oxytocin during delivery, analgesia with opioids, beginning of breastfeeding, low weight at birth, Apgar score after 5 minutes ≤7, neonatal convulsions, recovery in NICU, average duration of recovery.

The two outcomes 'women's satisfaction' and 'cost-effectiveness' of the model centered on the midwife are defined and measured in a different way in the different studies; this does not allow a synthetic esteem of the result.

The study of Wernham and Coll. (17) has on the contrary showed that some perinatal results are less favorable for the group of women assisted by midwives.

Among the 244,047 of pregnancies included in the study, 223,385 (91.5%) were assisted with the midwife led model of care, and 20,662 (8.5%) with the medical led care. The correct odds ratio has shown that the medical led care method was associated to a lower probability of: Apgar score after 5' <7 (OR 0.52; RC up to 95% (RC 95%) 0.43-0.64); intrauterine hypoxia

(OR 0.79; RC 95% 0.62-1.02); asphyxia delivery-related (OR 0.45; RC 95% 0.32-0.62); neonatal encephalopathy (OR 0.61; RC 95% 0.38-0.97).

The authors concluded that it was not possible to determine if this model was associated with less neonatal deaths; with an odds ratio for medical led care compared with the midwife led model of 0.80 (0.54-1.19) regarding perinatal mortality; 0.86 (0.55-1.34) regarding stillbirth and 0.62 (0.25-1.53) regarding neonatal mortality. Authors were not able to differentiate women belonging to the group of midwife- led model who have somehow benefited from a medical consultation. In order to better understand this study, a description of the delivery path of the New Zealand Health Service is needed. From 1990 the Health System supplies free assistance to maternity offering to take the woman in charge by a midwife, moreover it is possible to decide which professional takes in charge the woman and if needed to require a medical consultation.

Only a minimum part of the population (8.5%) seeks for the private assistance of a gynecologist, a fee-paying service. The population assisted by the physician is with high class origins, elective C-sections for the physician's clientele is around 32.8%, those for the clientele assisted by midwives is 7.4%, as described by Farquhar and McCowan, (18). Midwives assist women who come from difficult situations, of different ethnic groups, who live in rural and remote areas and the extraction of the data, such as perinatal mortality, NICUs recoveries is not well specified, and some data base might offer false data. The only two trials identified in the selection are secondary studies which come from one same trial which had the aim of verifying the outcomes of the assistance with the caseload midwife care and the standard care.

The randomized controlled trial" by McLachlan and Coll. (19) has examined the past of the women related to the birthing event. It was given a questionnaire by mail after two months from delivery. Caseload women reported a more positive birthing experience, compared to those with the standard care (adjusted odds ratio 1.50, 95% RC 1.22–1.84), moreover they reported of feeling more in control of their bodies during labour, more proud of themselves, less anxious and have more propensity for having another positive experience with pain.

Also the study by Forster and Coll. (20) aimed to examine the score of satisfaction of women in the assistance during pregnancy, delivery and puerperium. The assistance given in the caseload *c*ompared with that supplied in the standard care was associated to a major degree of satisfaction for the assistance during the pregnancy (OR 3.35; 95 % RC 2.79, 4.03), delivery (OR 2.14; 95 % CI 1.78, 2.57), hospitalized puerperium (OR 1.56, 95 % RC 1.32, 1.85) and puerperium at home (OR 3.19; 95 % RC 2.64, 3.85).

In addition, also the study by Allen et al (21), proposes to explore if women assigned to caseload model consider their midwife in a different way compared to those women assigned to standard care. This study was led in two academic hospitals in two Australian cities. The caseload model provided prenatal, intrapartum and postnatal assistance by a primary midwife or a "back-up" midwife; taking advantage also of medical consultations as recommended by national guidelines. The standard model included the assistance of a general physician and/or a gynecologist. A total of 1784 women were randomized between December 2008 and May 2011; 871 on caseload model and 877 on the standard model. The reply rate to the survey after six weeks, including the free text replies, was of the 52% (n=901). The interviewed women of both groups have described midwives as educational, competent and kind. The caseload participants have perceived midwives with qualities such as "Empowering" and "Endorfic". The caseload midwifery care attracts, motivates and allows midwives to go beyond the usual assistance. This allows women to feel competent, contained and safe throughout the pregnancy, labour and delivery.

Jepsen and Coll. (22) carried out "A qualitative study of how caseload midwifery is experienced by couples in Denmark". From the point of view of women and their partners, being assisted with caseload meant being recognized and cured as individuals. The partner felt considered, acknowledged and trained to work in team together with the midwife.

Discussion

This review gives an image of reliability of the caseload midwifery care model, even if the studies are

affected by heterogeneity of patient care and setting models. In the light of the evidences of the literature, the caseload midwifery care shows to be a reliable and safe organisational/patient care model. The maternal and neonatal outcomes are similar to those seen in standard models, in particular among the primary outcomes, it is noted a low frequency of: regional analgesia (epidural/spinal), operative vaginal delivery (forceps or vacuum), premature delivery, foetal/neonatal deaths. Moreover, the women assisted by a midwife of the caseload have had with a higher frequency a natural birth. It needs nevertheless to suit the model for the local conditions, holding in consideration the customs of assistance, the conditions allowing the implementation of such relief model, engaging all the professionals involved in the editing of lines drives shared. The literature evidences lead in synthesis to underline the potentialities of the therapeutic continuity applied to the assistance in the birth path and place the obstetric as a flywheel for the implementation of this model to the care system. The therapeutic continuity provided by the midwife acts by putting the woman/couple at the centre, offering containment and making the woman competent on her feelings. For all these reasons, it would be desirable for health care companies to take into account this model of care by starting shared projects.

Conclusions

Going into the national context, the introduction of such an innovative patient care model in the Italian panorama, suggests that the first step is to correctly recruit low-risk pregnant women, in order to enable the midwives to familiarise with the caring during the pregnancy, the delivery and the puerperium. It seems therefore possible to hypothesize a project of implementation of the midwifery-led care model in the birth path. The preliminary work should start with manners, involved operators and provided cures and it might be useful the certificate of assistance during the childbirth which collects all the facts concerning the assistance to the pregnancy and the delivery (32).

Therefore, while using national guidelines (7), it would be possible to draft local guidelines, involving all the operators, in order to share at the highest level the selection criterions of the patients and of medical consultancy requests. In order to recruit women it would be useful to use take-over assistance requests which can be found in family counselling centres. The organisation of the caring model is similar to the team care model, which means that a group of midwives (six or seven) takes charge of 35/40 women every year and gives assistance during all the pregnancy, involving also visits at home and during the puerperium.

The preference of the team care model rather than the caseload care model makes the project more attracting for the midwives, who could be overwhelmed by the workload or the dedication required by the caseload care model.

The availability should be of twelve hours; during the diurnal hours of working days the midwife, if not called, is available to practice post-natal visits or administrative works. The same work organization is proposed again the following day. As for the availabilities of the hospitals, when the night work exceeds the six hours, the following day is not considered a working one. The option of training other operators who usually do not work in the team can also be considered; these workers can be asked to make additional return, in order to cover the absences.

The midwives must have a driving license and a car. The kilometres made are payed according to the scheme of liquidation of the healthcare centre. The recruitment for the staff should be voluntary, between those who work there; every midwife presents her demand to cover the vacancy of the team. The selection is made by keeping into consideration the following criterions: the midwife's motivation to work in autonomy, good verbal and written communicative skills, capability to work in a team, knowledge and capacity to operate following the guidelines for the caring of the low-risk pregnancy, delivery and puerperium, ability to practice sutures of simple vaginal lacerations and episiotomies, ability in the management of shoulder dystocia, post-partum haemorrhage and neonatal resuscitation, at least two years of experience in hospitals, in the field of caring of the delivery and the puerperium.

It is considered appropriated to schedule a permanent training for: guidelines updating, ultrasound scanning, telephonic triage, neonatal reanimation and

periodic exercise on the main obstetric emergencies (shoulder dystocia, post-partum haemorrhage, and unplanned breech birth).

In order to make the insertion of the new midwifes more suitable, a one-month-period of mentoring is suggested, and a training course for what concerns the patient care during the low-risk pregnancy is also proposed.

A midwife leader or a team coordinator might be envisaged.

The ambulatories used by the team are located in family counselling centres/health houses or in the hospitals of reference.

The women generally should live in the territorial area for which the team is responsible for the patient care. An area of 200kmq with a population of 150.000/200.000 inhabitants can be hypothesized. The numbers can change in relation to the population density.

Eventually, in order to complete the project and measure the health outcomes obtained by this caring model, some performance markers need to be evaluated: number of natural deliveries, number of deliveries accelerated with oxytocin, number of operative vaginal deliveries, number of caesarean sections, number of healthy newborns transferred to neonatology because of complications, number of women with post-partum complications, number of women with post-partum complications during the first day. The collected data should then be discussed during periodic programmed audits in order to monitor the clinic outcomes. The eventual corrective actions should be based on the observations that arise from the audits. Such a project hypothesis, proposed here, requires sharing with the nursing and midwifery management and possibly also with the medical management. The success of the project lies in building rules shared between operators. This should be done in the production of guidelines and/or assistance protocols that indicate the levels of competence of professionals and trace the path of care based on evidence of effectiveness. Performance indicators and critical reviews of data collected and then discussed in dedicated audits will allow corrective action to be taken if necessary.

Limits

It still remains unclear if is better to organize the patient care offered by midwives in team care model or in caseload care model; thus, a further comparison between these two models would be useful. Other researches about the continuity of patient care developed by the midwives (34-36), which include the home birth (37) for both the low-risk and the high-risk women, would be appropriate.

Finally the health care managers are often sceptical towards midwifery-led care model, considering the staff as not suitable for the sudden lacks of hospital staff. So they perceive midwifery-led care model as a loss of hospital staff members, thinking that this model is more expensive than the traditional one.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

References

1. WHO Recommendations on antenatalcare for a positive pregnancy experience. WHO Library Cataloguing 2016; p. 176.
2. Ministero della Sanità. Regolamento concernente l'individuazione della figura e del relativo profilo professionale dell'ostetrica/o. [Regulations concerning the identification of the figure and the relative professional profile of the midwife.] D. M. n.740, 1994.
3. Ministero della Sanità. Progetto Obiettivo Materno Infantile. [Mother and Child Project Objective] D. M. 2000.
4. Ministero della salute, il Comitato per il Percorso Nascita nazionale istituito con tavolo di monitoraggio [The Committee for the National Birth Path] D.M. 29 luglio 2015.
5. Conferenza unificata stato-regioni e stato-città: Linee di indirizzo per la promozione ed il miglioramento della qualità**,** della sicurezza **e** del percorso nascita; [Guidelines for the promotion and improvement of quality, safety and of the birth path] Visto il Patto per la Salute 2010-2012
6. Ministero della Salute, Istituto Superiore della salute, CVEAS. Linea guida sulla gravidanza fisiologica [Guideline on physiological pregnancy] Linea guida 2011.
7. Ministero della Salute, Linee di indirizzo per la definizione e l'organizzazione dell'assistenza in autonomia da parte delle ostetriche alle gravidanze a basso rischio ostetrico (BRO) [Guidelines for the definition and organization of self-help by midwives to pregnancies with low obstetric risk] 2017.

8. Salute Emilia Romagna. Percorso Nascita [Birth Path] Direttiva Regionale alle Aziende Sanitarie DGR 533/2008.
9. Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: a multidisciplinary review. BMJ 2003; 327(7425): 1219-21.
10. Abdullah P, Gallant S, Saghi N, Macpherson A, Tamim H. Characteristics of patients receiving midwife-led prenatal care in Canada: results from the Maternity Experiences Survey (MES). BMC pregnancy childb 2017; 17: 164.
11. Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. Cochrane db syst rev 2016; 28; 4.
12. Symon A, Cheyne H, Downe S. Midwifery-led antenatal care models: Mapping a systematic review to an evidence-based quality framework to identify key components and characteristics of care. BMC pregnancy childb 2016; 19; 16(1): 168.
13. Berdún L, Escuriet R, Larios F. L, Rojas G.L. Maternity care in different countries. Midwife's contribution . Barcellona. Consell del col.legis d'infermeres de Catalunya. 2016. ISBN 978-84-608-7254-2
14. Jepsen I, Mark E, Nøhr EA, Foureur M, Sørensen EE. A qualitative study of how caseload midwifery is constituted and experienced by Danish midwives. Midwifery 2016; 36: 61-69.
15. Gaskin IM. Spiritual Midwifery. Summertown, Tennessee, Kindle Edition 2002 https://www.amazon.it/Spiritual-Midwifery-English-Ina-Gaskin.../dp/B0026IUOFU
16. Dawson K, Forster DA, McLachlan HL, Newton MS. Operationalising caseload midwifery in the Australian public maternity system: Findings from a national cross-sectional survey of maternity managers. Women birth 2018; 31(3): 194-20.
17. Wernham E , Gurney J, StanleyJ, Loschmann L.E, Sarfati D. A Comparison of Midwife-Led and Medical-Led Models of Care and Their Relationship to Adverse Fetal and Neonatal Outcomes A Retrospective Cohort Study in New Zealand', Plos med 2016; 13(9): 1-17.
18. Farquhar, Cynthia , McCowan, Lesley, Fleming, S. Letter to the editor. PLOS MED 2016; pp.0-1
19. McLachlan HL, Forster DA, Davey MA, Farrell T, Flood M, Shafiei T, Waldenström U. The effect of primary midwife-led care on women's experience of childbirth: Results from the COSMOS randomised controlled trial', Bjog-int j obstet gy 2016; 123(3): 465-474.
20. Forster DA, Davey MA, Biro M A, Farrell T, Gold L, Flood M, Shafiei T, Waldenströ U. Continuity of care by a primary midwife (caseload midwifery) increases women's satisfaction with antenatal, intrapartum and postpartum care: results from the COSMOS randomised controlled trial. BMC pregnancy childb 2016; p. 28
21. Allen J, Kildea S, Hartz DL, Tracy M, Tracy S. The motivation and capacity to go "above and beyond": Qualitative analysis of free-text survey responses in the M@NGO randomised controlled trial of caseload midwifery. Midwifery. 2017; pp. 148-156.
21. Jepsen I, Mark E, Foureur M, Nøhr EA, Sørensen EE. A qualitative study of how caseload midwifery is experienced by couples in Denmark. Women birth 2017; 30(1): 61-69.
23. Jepsen I, Mark E, Nøhr EA, Foureur M, Sørensen EE.A qualitative study of how caseload midwifery is constituted and experienced by Danish midwives. Midwifery 2016; 36: 61-69.
24. Newton MS, McLachlan HL, Forster DA, Willis KF. Understanding the "work"of caseload midwives: A mixed-methods exploration of two caseload midwifery models in Victoria, Australia. Women birth 2016; 29(3): 223-233.
25. Jepsen I, Juul S, Foureur M, Sørensen EE, Nøhr EA. Is caseload midwifery a healthy work-form? – A survey of burnout among midwives in Denmark. Sex dev 2017; 11: 102-106.
26. Perdok H, Jans S, Verhoeven C, van Dillen J, Batenburg R, Mol BW, Schellevis F, de Jonge A. Opinions of professionals about integrating midwife-and obstetrician- led care in The Netherlands. Midwifery 2016; 37: 9-18.
27. Perdok H, Jans S, Verhoeven C, Henneman L, Wiegers T, Willem Mol B, Schellevis F, de Jonge A. Opinions of maternity care professionals and other stakeholders about integration of maternity care: a qualitative study in the Netherlands. BMC pregnancy childb 2016; 16: 188.
28. Cummins AM, Denney-Wilson E, Homer CSE. The mentoring experiences of new graduate midwives working in midwifery continuity of care models in Australia. Nurse educ pract 2017; 24: 106-111.
29. Dawson K, McLachlan H, Newton M, Forster D. Implementing caseload midwifery: Exploring the views of maternity managers in Australia - A national cross-sectional survey.Women birth 2016; 29(3): 214-22.
30. Gidaszewski B, Khajehei M, Gibbs E, Chua SC.Comparison of the effect of caseload midwifery program and standard midwifery-led care on primiparous birth outcomes: A retrospective cohort matching study. Midwifery 2019; 69: 10-16.
31. Bradfield Z, Hauck Y, Kelly M, Duggan R.It's what midwifery is all about": WesternAustralian midwives' experiences of being 'with woman' during labour and birth in the known midwife model. BMC pregnancy childb 2019; 19: 29.
32. Ministero della Salute. Evento nascita, il Rapporto CeDAP 2013[Birth event, the CeDAP 2013 Report] 2015
33. Perrone E, Lupi C, Basevi V, Battaglia S, Gargano G. La Nascita in Emilia-Romagna 15° Rapporto sui dati del Certificato di Assistenza al Parto (CedAP) 2017 [The Birth in Emilia-Romagna 15th Report on the data of the Certificate of Assistance at Childbirth (CedAP) 2017] Regione Emilia Romagna 2018
34. Walker S, Batinelli L, Rocca-Ihenacho L, McCourt C. Keeping birth normal': Exploratory evaluation of a training package for midwives in an inner-city, alongside midwifery unit. Midwifery 2018; 60: 1-8.
35. McCourt C, Rance S, Rayment J, Sandall J. Organising safe and sustainable care in alongside midwifery units: Findings from an organisational ethnographic study. Midwifery 2018: 26-34.

36. Coates R, Rocca-Ihenacho L, Olander E, Ayers S, Salmon D. A postgraduate Optimum Birth module to increase midwives' readiness to work in midwifery-led settings: A mixed-methods evaluation. Birth fam j 2018: 21.
37. Leon-Larios F, Nuno-Aguilar C, Rocca-Ihenacho L, Castro-Cardona F, Escuriet R. Challenging the status quo: Women's experiences of opting for a home birth in Andalucia, Spain. Midwifery 2019; 70: 15-21.

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Assessing and preventing low back pain in nurses. Implications for practice management

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Abstract. *Background and aims:* The prevention of low back pain (LBP) among nurses employed in hospital departments represents a special concern for healthcare organizations globally. A growing literature evidences the need of workplace policy development related to organizational issues as strategic contribution to minimize the occurrence of LBP in healthcare sector. The purposes of this study were: 1) to analyze the relationship between shiftwork and acute LBP among female shift nurses; 2) to detect preventive interventions targeted on organizational issues. *Methods:* The authors conducted a cross-sectional nested case-control analysis of data concerning acute LBP and staffing data for 671 nurses employed in the Departments of General Practice and Elderly Care Medicine. The statistical analysis consisted of a logistic regression to calculate incidence odds ratios with 95% confidence intervals. Chi-square test and t-test were used to examine the relationship between categorical and continuous data, respectively. *Results:* The occurrence of acute LBP resulted significantly related to nightshift, extended shifts, obesity; the adoption of forward rotating schedules was found a protective factor in moderating the occupational risk of acute LBP in shift nurses. *Conclusions:* In this study the authors observed an association between shiftwork and acute LBP; improvement interventions should be aimed at: 1) moderating organizational risks linked with shiftwork schedules; 2) promoting healthy lifestyles. These interventions are suggested as a strategic way to effectively manage the phenomenon among female rotating shift nurses. (www.actabiomedica.it)

Key words: low back pain, safety, risk assessment, risk management., shift work, obesity

Introduction

The prevention of musculoskeletal disorders (MSDs) in healthcare workers (HCWs) is a major concern for both healthcare organizations and workers, globally. In fact, a growing literature reveals increased risk of MSDs in HCWs and the low back pain (LBP) has been proved the most common cause of work-related disabilities among nurses (1-4); increasing rates of LBP occurrence in nurses have been linked with the progressive aging of both healthcare workers and general population which significantly contribute to higher risk for intervertebral disk degeneration in older workers (5-7).

The evidence based prevention of occupational diseases in healthcare sector points to the need for workplace policy development focused on organizational issues as strategic contribution to minimize the occurrence of LBP in HCWs. In fact, Rasmussen et al. (8) in a cluster randomised controlled trial found that participatory ergonomic interventions targeted to organizational risk factors (e.g. lack of communication or bad communication between supervisors and employees or colleagues in-between), and psychosocial risk

factors (e.g. low prioritization of staff wellbeing, conflicts with the person that needs care), were effective in moderating the occurrence rates of MSDs in nurses. In the past, many studies have shown the relationship between psychosocial risks, including the shiftwork, and the LBP in registered nurses (RNs) (9-11); in particular, Hopcia et al. (12) found an increased risk of injury in RNs with more consecutive work days and longer cumulative working hours, and demonstrated the need for organizational interventions targeted to shiftwork schedules with the aim to better protect the safety and health of HCWs.

Many authors revealed shiftwork also an independent variable associated to a greater risk of increased body mass index (BMI) and central obesity (13-15) and supposed the circadian rhythm disruption and unhealthy lifestyles (e.g. poor dietary habits, low recreational physical activity, sleep deprivation) being the major determinants of such metabolic disorders; according to these findings a growing literature showed the need for workplace health promotion programs which involve lifestyle behaviors (e.g. physical activity, healthy diet), aimed at the prevention of musculoskeletal and other non-communicable diseases (16-19). Despite these finding, to date there has been little evidence about the impact of shiftwork, including night shift, on the occurrence of acute LBP among shift-RNs working non-traditional shifts, including nights and 12-hour shifts. The purpose of the present research was to analyze the impact of shiftwork, physical activity and BMI on the occurrence of work-related acute-LBP (WRALBP) among female rotating shift- registered nurses (RNs) in Departments of General Practice and Elderly Care Medicine, with the aim of suggesting organizational interventions that would be effective in minimizing the occurrence of WRALBP.

Methods

The authors conducted a matched case-control study that involved all the female rotating shift-RNs, exactly 671 (mean age: 46,4±2,3; years of work: 20,9±2,1) employed in Departments of General Practice and Elderly Care Medicine, in Italy. The study was performed in the period between December 2017 and November 2018 and was aimed at analyzing: 1) the relationship between cumulative hours, night shifts, and WRLBP 2) the relationship between forward-rotating shift schedules (morning-afternoon-night) and WRLBP occurrence 3) the relationship between BMI, physical activity, and WRLBP. The study of the work shift prior to the date of WRLBP analyzed: cumulative hours worked in the previous 7 and 28 days, cumulative nights worked in the previous 7 and 28 days, direction of rotating shift schedules in the previous 28 days prior to the date of NSI. A shift was categorized as a night shift if it included 1:00 am and 2:00 am as part of the shift. From the cohort of shift-RNs, the cases were selected according to the following case definition for WRLBP: activity-limiting LBP (± pain referred into one or both lower limbs) that lasts for at least one day; 'low back' was defined as the area on the posterior aspect of the body from the lower margin of the twelfth ribs to the lower gluteal folds [20]; the acute LBP occurred at work. If the cases reported more than one WRLBP incident, all the cases of WRLBP were included in the study. Controls were randomly selected by registry database of shift-RNs working in the same hospital, with similar demographic characteristics of the cases (unit type, job type, gender, age ± 5 year) and not already included in this study as cases. Each case was matched with two controls. All the cases and the controls were rotating shift-RNs employed in a Department of General Practice and Elderly Care Medicine in which the occupational risk assessment detected high levels of patient manual handling risk for shift-RNs (5). Cases and controls were divided according to: 1) number of night shifts worked 7 and 28 days prior to the day of WRLBP 2) total hours or shifts worked 7 and 28 days prior to the day of WRLBP 3) BMI 4) leisure physical activity 5) adoption of constant forward-rotating shift schedules 7 and 28 days prior to the day of WRLBP. BMI was categorized, according to the standard World Health Organization (WHO) definition (21), as normal if between 18.5 kg/m^2 and 24.99 kg/m^2, overweight if between 25kg/m^2 and 29.99 kg/m^2, and obese if 30 kg/m^2 or more. Leisure physical activity was defined as the equivalent of two and a half hours of moderate to vigorous physical activity each week, in leisure time; in fact, the WHO

recommended that all adults should get such activity to maintain good health (22-23). For the present research the author used the Occupational Prevention and Protection Service database consisting of all incident and safety reports (including the occurrence of WRLBP) and Human Resources information. The study population is reported in Table 1. The statistical analysis consisted of a logistic regression to calculate incidence odds ratios with 95% confidence intervals. Chi-square test and t-test were used to examine the relationship between categorical and continuous data, respectively. All analyses were performed using SPSS for windows. The study was performed as part of the obligatory evaluation of WRLBP, required by Italian Legislative Decree 81/08, and needed no formal approval by the local ethics committee.

Table 1. Study population

Variable	Cases n=93	Controls n=186	p-Value
Age (SD)	45,8 (±2,3)	46,1 (±3,1)	p>0,05
Years of work (SD)	19,3 (± 2,4)	18,9 (±3,4)	p>0,05
Physical activity (%)	19 (25,3)	78 (52)	P<0.05
BMI:			
<18.5	12(12,9%)	29 (15,6%)	p>0,05
18.5-24.99	22 (23,7%)	55 (29,6%)	p>0,05
25-29.99	32 (34,4%)	78 (41,9%)	p>0,05
>30	27 (29%)	24 (12,9%)	P<0.05

Results

In the period investigated, 93 cases of WRLBP were reported among the 671 female RNs (annual incidence = 13.9%); 5 cases reported more than one episode of WRLBP. No significant differences were found among cases and controls compared by cumulative hours and total shifts worked in the 7 and 28 days prior to acute LBP date. A significant risk of LBP was found for nurses working for more than two 12-hours shifts in the previous 7 days, compared to working less than three 12-hours shifts in the previous 7 days. Cumulative night shifts were significant for 3 or more night shifts compared to working less than 8 night shifts in the previous 28 days (OR=3,73; 95% CI=1.96-7.11) (Table 2). The adoption of constant forward-rotating shift schedules proved effective in preventing acute LBP compared with shift schedules that did not follow the constant forward-rotating model in the preceding 28 days (0,44; 95% CI=0,26-0,72 p<0,05) (Table 5). Less leisure time physical activity was reported among cases than controls (p<0.05) and showed as a protective factor for WRLBP occurrence (OR=0,36; 95% CI=0,20-0,64 p<0,05). The cases were more often obese than controls (Table 1) and an increased OR for acute LBP was found among obese RNs (OR=2,60; 95% CI=1,21-5,50) (Table 4).

Discussion

The analysis showed the relationship between shiftwork and WRLBP, and, consequently, the need to strategize regarding the best way to approach the

Table 2. Odds Ratios for number of night shifts worked 7 and 28 days prior to the day of WRALBP

	Cases N. 93	Controls N. 186	O.R. (95% CI)	p-Value
Number of night-shifts in previous 7 days (lenght ≥4 hours)				
0	5	12	1*	
1-2	42	98	1,03 (0,34-3,10)	p>0,05
3-6	46	65	1,70(0,56-5,18)	p>0.05
Number of night-shifts in previous 28 days (lenght ≥4 hours)				
<4	20	67	1*	
4-8	24	75	1,07 (0,54-2,11)	p>0,05
>8	**49**	**44**	**3,73 (1,96-7,11)**	**p<0.05**

WRALBP, work-related acute low back pain.
*Referent category

Table 3. Odds Ratios for total hours or shifts worked 7 and 28 days prior to the day of WRALBP

	Cases N. 93	Controls N. 186	O.R. (95% CI)	p-Value
Total hours worked in previous 7 days				
<20	3	6	1*	
20-28	13	24	1,08 (0,23-5,06)	p>0,05
29-36	72	150	0,96 (0,23-3,95)	p>0,05
>36	8	16	1,0 (0,20-5,01)	p>0,05
Total shifts (any shift ≥4 hours) worked in previous 7 days				
0	4	7	1*	
1-2	18	95	0,33 (0,09-1,25)	p>0,05
3-6	71	84	1,48 (0,42-5,26)	p>0,05
Total 12-hr (or longer) shifts in previous 7 days				
0	3	15	1*	
1-2	84	167	2,51 (0,71-8,93)	p>0,05
3-6	**6**	**4**	**7,50 (1,28-44,1)**	**P<0.05**
Total hours worked in previous 28 days				
<80	6	13	1*	
80-115	7	9	1,69 (0,42-6,71)	p>0,05
116-144	30	65	1,00 (0,35-2,88)	p>0,05
>144	50	99	1,10 (0,39-3,05)	p>0,05
Total shifts (any shift ≥4 hours) worked in previous 28 days				
<6	3	8	1*	
6-12	19	50	1,01 (0,36-2,85)	p>0,05
>12	71	128	1,50 (0,38-5,75)	p>0,05
Total 12-hr (or longer) shifts in previous 28 days				
<6	4	10	1*	
6-12	83	166	1,25 (0,38-4,11)	p>0,05
>12	6	10	1,50 (0,32-6,99)	P>0,05

*Referent category

Table 4. Odds Ratios for BMI of cases and controls

Body Mass Index (BMI)	Cases	Controls	O.R. (95% CI)	p Value
< 18,5	11	31	1,13 (0,47-2,72)	p>0,05
18,5-24,99	24	52	1*	
25-29,99	34	83	0,89 (0,47-1,66)	p>0,05
≥30	**24**	**20**	**2,60 (1,21-5,50)**	**P<0.05**

*Referent category

concern; in fact, increased OR for WRLBP was found for RNs working night-shifts more than 8 nights in 28 days. This finding confirmed the evidence in the literature regarding the harmful effect of shift work, including night shift, on workers' safety; in the past, many studies demonstrated the link between shiftwork and occupational stress, burnout, fatigue, sleeping difficulties, reduced work efficiency, poor performance, decreased job satisfaction, increased rates of absenteeism and turnover and increased accident and injury

Table 5. Odds Ratios for adoption of constant forward-rotating shift schedules worked 7 and 28 days prior to the day of WRALBP

	Cases N. 93	Controls N. 186	O.R. (95% CI)	p-Value
Constant forward-rotating shift schedules in previous 7 days (%)	31 (33,3)	81 (43,5)	0,65 (0,39-1,10)	p>0,05
Constant forward-rotating shift schedules in previous 28 days (%)	**38 (40,9)**	**114 (61,3)**	**0,44 (0,26-0,72)**	**p<0,05**

rates (24-26). In the present study, night shift work was confirmed as a workplace stressor for shift-RNs working frequent night shifts – a stressor that could be minimized through organizational interventions aimed at reducing the number of night shift per RN to be no more than 8 nights every 28 days. The risk of WRLBP resulted increased among RNs working three or more 12-hour shifts a week or working more than six 12-hour shifts every 28 days; this finding demonstrated the unhealthy impact of extended shifts on the workers' safety, in accordance with many authors (12, 24-27) who have pinpointed such extended shifts as major risk for the occurrence injuries. This finding may be due to increased fatigue, poor mood, poor recovery from work between work periods, all of which have been linked to long work hours (26-30, 31). Extended shifts followed by several days off allow workers to better manage schedules outside of work, but represent an risk for occupational acute-LBP.

In accordance with HSE recommendations (32), the adoption of forward-rotating schedule for rotating shifts proved effective at better protecting the workers' safety than a backward-rotating schedule or other rotating schedules; in fact, we observed a trend of increasing OR for acute-LBP in RNs adopting rotating schedules other than forward rotating shift-work.

These findings showed that RNs with a heavy night work load and frequent extended shifts may incur a greater risk of WRLBP; organizational interventions targeted at reducing the shift load (e.g. number of night shifts less than nine monthly, limitation of extended shifts, adoption of forward-rotating schedule) are required to moderate the shift workload and, consequently, to minimize the occurrence of WRLBP among RNs in Departments of General Practice and Elderly Care Medicine.

The analysis of BMI revealed that cases were more frequently obese than controls, and obesity was associated with a high risk of WRLBP (OR=2,60; I.C.= 1,21-5,50); these findings confirmed the evidence reported by many authors (18, 19) in reference to the relationship between shiftwork and increased BMI, and showed that obesity is a risk for the occurrence of WRLBP among female RNs.

This study supported the need to prioritize interventions aimed at promoting healthy lifestyle choices and targeting modifiable lifestyle factors (e.g. alcohol consumption, smoking habit, physical activity), with the aim of preventing non-communicable diseases and, particularly, the occurrence of WRLBP among rotating shiftwork RNs.

Conclusion

Shiftwork and WRLBP were found to be interconnected. Improvement interventions should be aimed at: 1) moderating the organizational risks linked with shiftwork schedules; 2) promoting healthy lifestyles. These interventions are suggested as a strategic way to effectively manage the phenomenon among female rotating shift-RNs in Departments of General Practice and Elderly Care Medicine. According to the World Health Organization, constructing healthy workplaces, including in the healthcare sector, is a goal that may be reached through collaboration between workers and managers, with the aim of promoting and protecting the health, safety and well-being of all workers and the sustainability of the workplace (33).

The study has some limitations: 1) the period investigated is too short to draw strong conclusions about the relationship between shift work schedules and occurrence of WRLBP; 2) the analysis is conducted on a small sample; 3) the study is targeted to the relationship between WRLBP and cumulative hours, night shifts, forward-rotating shift schedules, BMI,

physical activity, and does not take into account other types of determinants for WRLBP; 4) the disadvantage of case-control studies is that they do not indicate absolute risk, but, rather, the risk of the category worked related to another lower or referent category.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

References

1. Freimann T, Pääsuke M, Merisalu E. Work-Related Psychosocial Factors and Mental Health Problems Associated with Musculoskeletal Pain in Nurses: A Cross-Sectional Study. Pain Research and Management. 2016; http://dx.doi.org/10.1155/2016/9361016.
2. Duthey B. Background Paper 6.24 Low back pain. World Health Organization. 2013. Available from: www.who.int/medicines/areas/priority.../BP6_24LBP.
3. Sadeghian F, Hosseinzadeh S, Aliyari R. Do Psychological Factors Increase the Risk for Low Back Pain Among Nurses? A Comparing According to Cross-sectional and Prospective Analysis. Saf Health Work 2014; 5: 13-16.
4. Lin PH, Tsai YA, Chen WC, Huang SF. Prevalence, characteristics, and workrelated risk factors of low back pain among hospital nurses in Taiwan: a cros ssectional survey. Int J Occup Med Environ Health 2012; 25: 41e50.
5. Battevi N, Menoni O, Alvarez-Casado E. Screening of patient manual handling risk using the MAPO method. Med Lav 2012 Jan-Feb; 103(1): 37-48.
6. Sharma S, Shrestha N, Jensen MP. Pain-related factors associated with lost work days in nurses with low back pain: across-sectional study. Scand J Pain 2016; 11: 36-41.
7. Lorusso A, Bruno S, L'Abbate N. A review of low back pain and musculoskeletal disorders among Italian nursing personnel. Ind Health 2007; 45: 637e44.
8. Rasmussen CD, Holtermann A, Jørgensen MB, Ørberg A, Mortensen OS, Søgaard K. A multi-faceted workplace intervention targeting low back pain was effective for physical work demands and maladaptive pain behaviours, but not for work ability and sickness absence: Stepped wedge cluster randomised trial. Scand J Public Health 2016 Aug; 44(6): 560-70.
9. Wagstaff AS, Sigstad Lie JA Shift and night work and long working hours--a systematic review of safety implications. Scand J Work Environ Health 2011 May; 37(3): 173-85. doi: 10.5271/sjweh.3146. Epub 2011 Feb 3.
10. Stimpfel AW, Brewer CS, Kovner CT. Scheduling and shift work characteristics associated with risk for occupational injury in newly licensed registered nurses: An observational study. Int J Nurs Stud 2015 Nov; 52(11): 1686-93.
11. Attarchi M, Raeisi S, Namvar M, Golabadi M. Association between shift working and musculoskeletal symptoms among nursing personnel. Iran J Nurs Midwifery Res 2014 May; 19(3): 309-14.
12. Hopcia K, Dennerlein JT, Hashimoto D, Orechia T, Sorense G. A Case-Control Study of Occupational Injuries for Consecutive and Cumulative Shifts Among Hospital Registered Nurses and Patient Care Associates. Workplace Health Saf 2012 October; 60(10): 437–444.
13. Peplonska B, Bukowska A, Sobala W. Association of Rotating Night Shift Work with BMI and Abdominal Obesity among Nurses and Midwives. PLoS ONE 2015; 10(7): e0133761.
14. Peplonska B, Bukowska A, Sobala W. Rotating night shift work and physical activity of nurses and midwives in the cross-sectional study in Lodz, Poland. Chronobiol Int 2014; 31: 1152-1159.
15. Peplonska B, BurdelakW, Krysicka J, Bukowska A, Marcinkiewicz A, Sobala W, et al. Night shift work and modifiable lifestyle factors. Int J Occup Med Environ Health 2014; 27: 693-706.
16. Zhao I, Bogossian F, Turner C. The effects of shift work and interaction between shift work and overweight/obesity on low back pain in nurses: results from a longitudinal study. J Occup Environ Med 2012 Jul; 54(7): 820-5.
17. Pepłońska B, Burdelak W, Krysicka J, Bukowska A, Marcinkiewicz A, Sobala W, Klimecka-Muszyńska D, Rybacki M. Night shift work and modifiable lifestyle factors. Int J Occup Med Environ Health 2014 Oct; 27(5): 693-706.
18. Buchvold HV, Pallesen S, Øyane NM, Bjorvatn B. Associations between night work and BMI, alcohol, smoking, caffeine and exercise--a cross-sectional study. BMC Public Health 2015 Nov 12; 15: 1112.
19. Tada Y, Kawano Y, Maeda I, Yoshizaki T, Sunami A, Yokoyama Y, Matsumoto H, Hida A, Komatsu T, Togo F. Association of body mass index with lifestyle and rotating shift work in Japanese female nurses. Obesity (Silver Spring) 2014 Dec; 22(12): 2489-93.
20. Weaver MD, Patterson PD, Fabio A, Moore CG, Freiberg MS, Songer TJ. The association between weekly work hours, crew familiarity, and occupational injury and illness in emergency medical services workers. Am J Ind Med 2015 Dec; 58(12): 1270-7.
21. WHO. Physical status: the use and interpretation of anthropometry: report of a WHO expert committe. WHO Technical Report Series 1995; 854: 1-452. PMID: 8594834.
22. Harvard T.H. Chan. School of Public Health. Obesity Prevention Source. [Internet] [cited 2016 Oct 21] https://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/physical-activity-and-obesity/#references.
23. World Health Organization. Global recommendations on physical activity for health; 2011. Accessed Gen 25, 2017.
24. Caruso CC, Condon ME. Night shifts and fatigue: coping skills for the working nurse. Am J of Nursing 2006; 106: 88.
25. Caruso CC, Waters TR. A review of work schedule issues

and musculoskeletal disorders with an emphasis on the healthcare sector. Ind Health 2008; 46: 523-34.
26. Caruso CC. Negative Impacts of Shiftwork and Long Work Hours. Rehabil Nurs 2014; 39(1): 16-25.
27. Dwyer T, Jamieson L, Moxham L, Austen D, Smith K. Evaluation of the 12-hour shift trial in a regional intensive care unit. Nurs Manag 2007 Oct; 15(7): 711-20.
28. van der Hulst M, van Veldhoven M, Beckers D. Overtime and need for recovery in relation to job demands and job control. J Occup Health 2006 Jan; 48(1): 11-9.
29. van der Starre RE, Coffeng JK, Hendriksen IJ, van Mechelen W, Boot CR. Associations between overweight, obesity, health measures and need for recovery in office employees: a cross-sectional analysis. BMC Public Health 2013 Dec 20; 13: 1207.
30. d'Ettorre G. Needlestick and Sharp Injuries Among Registered Nurses: A Case–Control Study. Ann Work Expo Health 2017; 61 (5): 596-599. doi: 10.1093/annweh/wxx027.
31. d'Ettorre G, Vullo AM, Pellicani V, Ceccarelli G. Acute low back pain among registered nurses. Organizational implications for practice management. Ann Ig 2018; 30: 482-489 doi:10.7416/ai.2018.2248.
32. Health and Safety Executive (UK). Managing shiftwork - Health and safety guidance. London: HSE. 2006. Available from: www.hse.gov.uk/pubns/books/hsg256.htm.
33. World Health Organization (Geneva). Healthy workplaces: a model for action: for employers, workers, policymakers and practitioners. 2010. Available from: ww.who.int/... health/.../healthy_workplaces_model.pdf

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Emotional exhaustion among healthcare professionals: the effects of role ambiguity, work engagement and professional commitment

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Abstract. *Background and aim:* The study aims at identifying the antecedents and consequences of emotional exhaustion in health professionals and, particularly, examining the process that leads from a hindrance demand, like role ambiguity, to exhaustion and job satisfaction. Emotional exhaustion is a phenomenon that affect health professionals with negative consequence on job satisfaction, and literature has underlined that job demands could be may be a cause of this chronic stress. However, the relationship among job demands, work engagement and exhaustion has produced results not always converging. *Method:* A self-report questionnaire was administered to 66 health professionals. *Results:* The results showed that the effect of role ambiguity on emotional exhaustion was mediated by work engagement and the emotional exhaustion impairs job satisfaction when workers are not committed to their profession. *Conclusions:* Role ambiguity represents a psychosocial risk factor that influence workers' wellbeing diminishing the level of motivation and this process leads to emotional exhaustion. However, professional commitment appears to be a resource that can protect professionals preventing a decrease in satisfaction. These findings suggest that human resource management should remove hindrance stressors and enhance the mission of Healthcare Professionals in order to increase employees' work engagement and prevent exhaustion. (www.actabiomedica.it)

Key words: healthcare professionals, role ambiguity, emotional exhaustion, job satisfaction

Burnout is a common phenomenon in healthcare organisations because health professionals are continually exposed to the physical and emotional needs of their patients (1, 2), are involved in complex relationships with patients' families and have long working hours and are overloaded (3). Burnout is defined as a negative response to chronic stress in the workplace (4, 5), and consists of three symptoms: emotional exhaustion – i.e. the feeling of not being able to give anything to others on an emotional level, depersonalisation – i.e., an excessively detached attitude towards patients and low personal accomplishment – i.e. a negative work-related self-evaluation (6, 7). Burnout has negative repercussions for the efficiency of patient care and for workers' wellbeing (8, 9): it may lead to negative outcomes such as medical errors, depression and absenteeism (10).

Researchers have shown that organisational factors may be a cause of chronic stress in the workplace, leading to job burnout in healthcare professions. Professional and career issues, workload and time pressure, team climate and leadership (11), lack of job control, role conflict and role ambiguity (3, 12, 13) have been identified as factors which affect burnout risk amongst employees.

In this paper we focused on role ambiguity, i.e. situations when workers' expectations about a role and the actual tasks required in that role are contradictory

or when a worker does not have access to sufficiently clear information about the goals and responsibilities of his or her job (14, 15). This lack of clarity about goals and organisational role can produce incompatibilities in expectations, resulting in increased occupational stress, decreased professional performance and impaired organisational efficiency (8, 12, 16). Chu, Lee and Hsu (17) found that role ambiguity was negatively associated with employees' performance with negative consequences for the wellbeing of the organisation.

Work Engagement

When we talk about the burnout, we must consider another construct, namely engagement, which is opposite but related to it (7). Kahn (18) introduced the concept of engagement, conceptualising it as the "harnessing of organisation members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances" (p. 694). Thus, engaged employees identify with their work activity and invest effort in it. According to Kahn (18, 19) there is a dynamic, dialectical relationship between the person who puts physical, cognitive, emotional and mental energy into his or her work role and the nature of the work role that allows this person to express him or herself.

Research on burnout has stimulated a new theoretical approach that considers engagement as an independent, distinct concept that is negatively related to burnout (20). Engagement is a positive, persistent state of mind that is related to work and characterised by three dimensions (21): vigour, which allows one to invest energy and effort in one's work and show mental resilience in the face of difficulties; dedication, which involves being involved in one's work and perceiving it as exciting and challenging; absorption, which means concentrating fully on one's work so that one has the feeling that time passes quickly (20). Engagement is closely related to the motivational processes that lead workers to take satisfaction from job tasks whereas burnout is characterised by the opposite: lack of energy and detachment from work activities (22).

Job Demands–Resources Model

The job demands-resources model (20) incorporates both burnout and work engagement, treating them as two different processes that lead to different outcomes, negative (burnout and its consequences) or positive (engagement and its consequences). The job-demands resources model identifies *job demand*s, i.e. those aspects of a job that require sustained physical or mental effort and *job resources* (personal and work related resources) that allow workers to achieve goals, reduce job demands and costs and stimulate personal growth and development. The model posits both an *energetic process*, whereby high job demands exhaust employees' resources and thus deplete their energy (i.e. produce exhaustion) and lead to health problems (*health impairment process*) and a *motivational process* whereby job resources foster engagement, with positive effects on wellbeing and work outcomes (23).

As yet, however, the job demands-resources model has not been used to examine the relationship between job demands and work engagement in depth. Research into job demands as a potential predictor of work engagement has produced mixed results (23). Some studies have identified distinct types of job demands (24, 25), which could explain these inconsistencies.

Cavanaugh et al. (25) identified two categories of job demands with different consequences for engagement, which they labelled *challenge* stressors and *hindrance* stressors. Challenge demands are stressful requests, such as being asked to assume a high level of responsibility, that can be perceived as opportunities for learning or personal and professional growth that may lead to future gains. Hindrances tend to be perceived as stressful requests that have the potential to impede personal growth, learning and goal achievement. Role conflict and ambiguity and organizational policy are part of this type of demands. Hindrances tend to generate negative emotional states and result in a dysfunctional style of coping, such that investing energy in negative emotions acts as a barrier to workers getting interesting goals and decreases motivation and engagement in work activities (26, 27).

Harter et al. (28) showed that people who do not know what is expected of them are less likely to be emotionally engaged, because they have to invest effort

in clarifying the ambiguities of their role, which has consequences for their wellbeing and work satisfaction. Other studies have also underlined that role ambiguity is related to a decrease in affective engagement, which reduces employee wellbeing (24, 29).

Starting from this distinction between job demands and the original definition of engagement (in terms of involvement in role organisation), we hypothesised that in health professionals the relationship between a hindrance demand, namely role ambiguity, and exhaustion is mediated by work engagement, such that hindrance demands have negative consequences for job satisfaction.

Professional Commitment

One personal resource that can influence the motivational process and job satisfaction is professional commitment (30), which has been defined as the extent to which workers feel involved with their profession (31). Research in health organisations has showed that professional commitment is positively related to job performance and low turnover, satisfaction with work activity (32) and organisational commitment (33).

Professional commitment, which is associated with team commitment, can also increase interprofessional collaboration amongst nurses and physicians (34-39). Hence the second objective of this study was to explore how professional commitment moderates the relationship between emotional exhaustion and job satisfaction.

Hypotheses

Starting from the distinction between hindrance and challenge job demands, we hypothesised that role ambiguity, a hindrance demand, influences exhaustion through the mediation of job engagement (Hypothesis 1). Specifically, we hypothesised that health professionals who perceived high role ambiguity would be less engaged in work activity and invest energy in dealing with negative feelings activated by stressful demands and hence would perceive themselves to be exhausted and fatigued.

Secondly, in line with the health impairment process postulated in the Job Demands-Resources Model, we hypothesised that emotional exhaustion would reduce job satisfaction (Hypothesis 2).

Our final prediction concerned the moderation of the relationship between emotional exhaustion and job satisfaction by professional commitment. We hypothesised that emotional exhaustion reduces job satisfaction only when professional commitment is low (Hypothesis 3).

Method

Data Collection

A self-report questionnaire was hand delivered by researchers to health professionals working at the Cardio-Nephro-Pulmonary Department and Geriatric Rehabilitation Department of a hospital in northern Italy.

Ethical Issue

The research protocol was approved by the Research Ethics Committee of the participating hospital.

Participants

Sixty-six questionnaires were returned. Participants were mainly women (70%; three participants did not report their gender) with a mean age of 41.82 years (*SD* = 9.88; 5 participants did not report their age). Forty (62.5%) participants were nurses or nurse managers, twelve (18.5%) were physicians, eight (12.3%) were healthcare operators and five (7.7%) had other roles.

Measures

The questionnaire consisted of several scales, relevant to the theoretical concepts about which we had hypothesised, that have been validated in Italian and international contexts.

Role ambiguity was measured with the scale developed by Rizzo et al. (40). The scale consists of four items referring to the clarity of respondents' expectations about their role (e.g. 'In my job I know exactly

what is expected of me'). The reliability of the scale was satisfactory (α = .75).

Emotional exhaustion was measured by MBI – General Survey (41). The scale consists of five items referring to the feeling of being emotionally depleted (e.g. 'I feel run down and drained of physical or emotional energy'). All items were scored on a seven-point scale ranging from 0 = 'never' to 6 = 'always/every day'. The reliability of the scale was satisfactory (α = .91).

Work engagement was assessed using the Italian version (42) of the nine-item Utrecht Work Engagement Scale (UWES-9) (43). The three sub-dimensions of vigour (e.g., 'At my job I feel strong and vigorous'), dedication (e.g. 'I am enthusiastic about my job') and absorption (e.g. 'I feel happy when I am working intensely') are each represented by three items. All items were scored on a seven-point scale ranging from 0 = 'never' to 6 = 'always/every day'. We followed Schaufeli and colleagues' (43) recommendation and computed an overall work engagement score (α = .93).

Job satisfaction was assessed with a single item (44): 'Overall, how satisfied are you with your job?', to which responses were given using a five-point scale ranging from 1 = 'totally unsatisfied' to 5 = 'totally satisfied'.

Professional commitment was measured with six items (e.g. 'I am proud to be a nurse/physician/healthcare operator') taken from the Professional Identity Status Questionnaire (PISQ-5d); (30). Responses were given using a four-point Likert scale (1 = 'strongly disagree', 4 = 'completely agree'). The reliability was satisfactory (α = .91).

Analysis Strategy

First we analysed zero-order correlations between the measured variables. We then tested our predicted model (see Figure 1) using path analysis with maximum likelihood and robust standard error estimation. All variables except job satisfaction were centred on the grand mean and the interaction between professional commitment and emotional exhaustion was computed after centring.

Results

Preliminary Analysis

Table 1 shows zero-order correlations and descriptive statistics for the measured variables. Job satisfaction was positively correlated with both work engagement and professional commitment, whereas emotional exhaustion and role ambiguity were negatively correlated with job satisfaction. Emotional exhaustion, in turn, was negatively correlated with work engagement and positively correlated with role ambiguity.

Hypothesis Testing

Path analysis (see Figure 1) indicated that, unlike in the zero-order correlations, there was no direct effect of role ambiguity on emotional exhaustion, b = .21, SE = .25, Z = 0.86, p = .39. This is because, in accordance with hypothesis 1, the effect of role ambiguity on emotional exhaustion was completely me-

Table 1. Correlations and descriptive statistics of measured variables

	Work engagement	Emotional exhaustion	Role ambiguity	Professional commitment	Job satisfaction
Work engagement	-	-.69**	-.50**	.73**	.68**
Emotional exhaustion		-	.43**	-.54**	-.48**
Role ambiguity			-	-.40**	-.53**
Professional commitment				-	.67**
M	4.65	3.11	2.66	3.20	4.15
SD	1.29	1.68	0.87	0.81	1.37

** p < .01. N = 66

diated by work engagement, b = .63, SE = 0.15, Z = 4.09, p < .001, 90%CI = 0.327-0.927. Also as expected, professional commitment had a direct effect on emotional exhaustion, b = .79, SE = .23, Z = 3.43, p = .001. However, contrary to hypothesis 2 and the results of the correlation analysis, emotional exhaustion did not have a direct effect on job satisfaction, b = -.12, SE = .01, Z = 1.24, p = .22. Nevertheless, in accordance with hypothesis 3, this relationship was subject to an interaction between emotional exhaustion and professional commitment, b = .21, SE = .11, Z = 1.96, p = .05. More precisely, when professional commitment was low, emotional exhaustion had a negative effect on job satisfaction, b = -.30, SE = .13, Z = 2.30, p = .02, whereas when professional commitment was high, emotional exhaustion did not affect job satisfaction, b = .05, SE = .14, Z = 0.36, p = .72. Figure 1 shows the paths linking emotional exhaustion, job satisfaction and professional commitment.

Figure 2. Relationship between emotional exhaustion on job satisfaction at various levels of professional commitment

Discussion

This study aimed to examine the process that produces emotional exhaustion in health professionals, focusing on the hindrances they experience (45, 46), specifically role ambiguity and its consequences for work satisfaction.

Analysis showed that the effect of role ambiguity on emotional exhaustion was mediated by work engagement. Role ambiguity represents a psychosocial risk factor that influence workers' wellbeing and level of performance. Workers who do not perceive clear

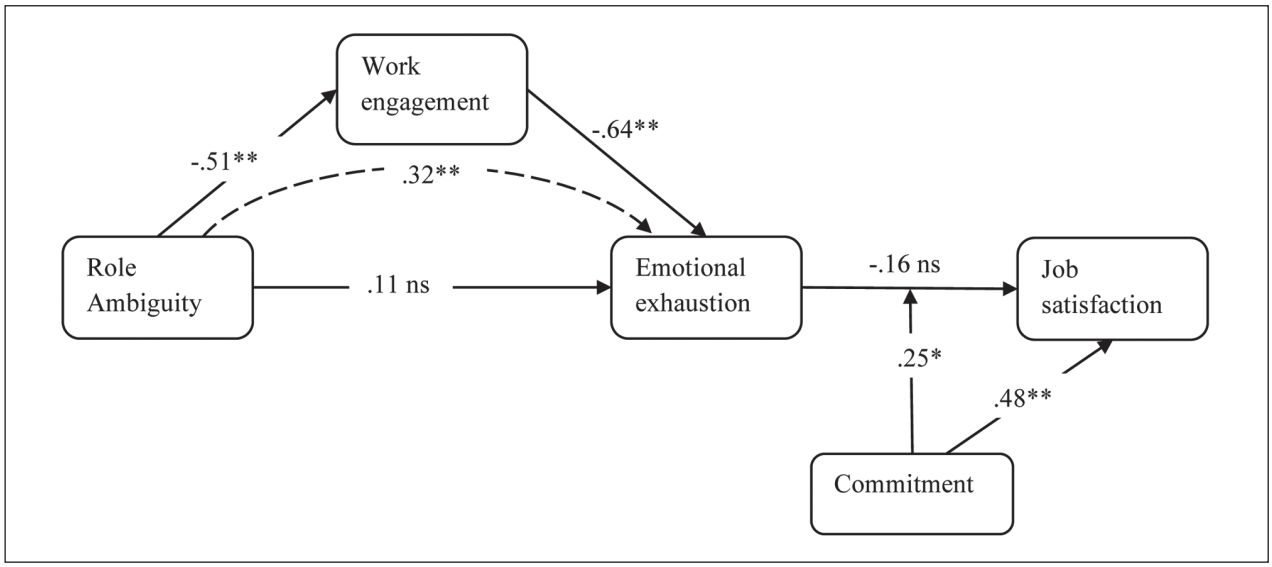

Figure 1. Model of the relationships amongst variables and estimations.
*p = .05;** p < .01
Standardised coefficients are reported. Dotted line represents the indirect effect. N = 66

goals put less effort into their tasks and perform less effectively. As a consequence, workers who lack clear goals show less engagement and hence experience lower wellbeing and job satisfaction (24, 25, 47). Harter, Schmidt and Hayes (28) also reported that workers' engagement is negatively affected by difficulties such as not knowing what is expected of them. Role ambiguity generates uncertainty about how to attain one's performance objectives and creates doubt about how tasks should be completed and how performance will be assessed (48). The increased effort required to cope with role ambiguity results in strain, which may manifest as frustration and fatigue, and can lead to employees feeling exhausted, worn out and dissatisfied. Thus the emotional consequences of role ambiguity can lead to increased turnover and intention to leave (49).

In fact, people experiencing hindrance stress will direct an amount of effort to face each demand, and they will probably use energy that would otherwise be dedicated to achieving challenge goals. Workers who have to deal with the negative emotions and psychological threat associated with hindrance demands use many resources that are detrimental to the motivational process of engagement (26, 27). Hence hindrance demands lead to exhaustion and frustration, which has negative consequence for work satisfaction.

In contrast, role fit predicts psychological meaningfulness, which has a positive influence on engagement. Professionals who are emotionally engaged tend to know what is expected of them, perceive that they are a member of an organisation where there are chances of development (28). If an individual has the opportunity to build resources through acquisition of mastery and personal growth, he or she will make more effort to complete work tasks and achieve personal own performance objectives.

Our results also indicated that emotional exhaustion only impairs job satisfaction when workers are not committed to their profession. In other words, professional commitment appears to protect exhausted professionals, helping them to manage the associated emotional distress and maintain adequate job satisfaction. This may be due to the fact professional commitment satisfies professionals' need to belong and supplies professionals with roles, norms and identities that can compete with self and professional devaluation and emotional exhaustion. Thus, professional commitment appears to be an individual and collective resource that can help professionals to build a strong, resilient and satisfying professional identity.

Limitations

This study has a number of limitations. First, the use of cross-sectional questionnaires and a correlational design means that we must be cautious about inferring causal relationships among variables. Second, the sample size was small and composed mainly of nurses; in other words it was not representative of healthcare professionals generally. These two factors may reduce the generalisability of the results.

Implication for Nursing Management

Understanding the factors affecting job burnout is important from a practical point of view, because burnout has implications for workers' psychosocial wellbeing, organisational effectiveness, and consequently for the patient care process. In fact, role ambiguity has serious consequences also for the efficiency of care process.

From the perspective of the strategic management of human resources, the clarification of professional roles helps to identify the expected behaviours with respect to integration into organisational patterns and culture. This intervention could allow defining significant and successful actions to achieve goals in line with values and mission of healthcare services.

These findings also suggest that managers should remove hindrance stressors in order to increase employees' work engagement whilst at the same time providing challenge-related stressors in the workplace.

Finally, managers who want try to improve the work context in order to reduce job dissatisfaction and turnover should be aware of the protective function served by professional commitment. Professionals should always feel that they are treated as such and that their professional competence is recognised. This may help professionals not to forget their professional duties and mission with respect to patients' care and to continue to perceive their job and profession as satisfactory.

The model developed from these findings suggests ways of improving employment strategies to enhance health professionals' job satisfaction.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

References

1. Cao X, Chen L, Tian L, Diao Y. The effect of perceived organisational support on burnout among community health nurses in China: The mediating role of professional self-concept. J Nurs Manag 2016; 24(1): E77-E86. doi: 10.1111/jonm.12292.
2. Sun JW, Bai HY, Li JH, Lin PZ, Zhang HH, Cao FL. Predictors of occupational burnout among nurses: a dominance analysis of job stressors. J Clin Nurs 2017; 26(23-24): 4286-4292. doi: 10.1111/jocn.13754.
3. Tunc T, Kutanis RO. Role conflict, role ambiguity, and burnout in nurses and physicians at a university hospital in Turkey. Nurs Heal Sci 2009; 11(4): 410-416. doi: 10.1111/j.1442-2018.2009.00475.x.
4. Maslach C, Schaufeli WB, Leiter MP. Job burnout. Annu Rev Physiol 2001; (52): 397–422. doi: 10.1146/annurev.psych.52.1.397.
5. Maslach C, Leiter MP. Early Predictors of Job Burnout and Engagement. J Appl Psychol 2008; 93(3): 498-512. doi: 10.1037/0021-9010.93.3.498.
6. Han S-S, Han J-W, An Y-S, Lim S-H. Effects of role stress on nurses' turnover intentions: The mediating effects of organizational commitment and burnout. Japan J Nurs Sci 2015; 12(4): 287-296. doi: 10.1111/jjns.12067.
7. Bakker AB, Demerouti E, Sanz-Vergel AI. Burnout and Work Engagement: The JD–R Approach. Ssrn. 2014; 1(1): 389-411. doi: 10.1146/annurev-orgpsych-031413-091235.
8. Garrosa E, Moreno-Jiménez B, Liang Y, González JL. The relationship between socio-demographic variables, job stressors, burnout, and hardy personality in nurses: An exploratory study. Int J Nurs Stud 2008; 45(3): 418-427. doi: 10.1016/j.ijnurstu.2006.09.003.
9. Kendrick P. Comparing the effects of stress and relationship style on student and practicing nurse anesthetists. AANA J 2000; 68(2): 115-122.
10. Dimou FM, Eckelbarger D, Riall TS. Surgeon Burnout: A Systematic Review. J Am Coll Surg 2016; 222(6): 1230-1239. doi: 10.1016/j.jamcollsurg.2016.03.022.
11. Zhou H, Gong YH. Relationship between occupational stress and coping strategy among operating theatre nurses in China: A questionnaire survey. J Nurs Manag 2015; 23(1): 96-106. doi: 10.1111/jonm.12094.
12. Lambert VA, Lambert CE. Literature review of role stress/strain on nurses: An international perspective. Nurs Health Sci 2001; 3(3): 161-172. doi: doi: 10.1046/j.1442-2018.2001.00086.x.
13. Lambert VA, Lambert CE, Petrini M, Li M, Zhang YJ. Workplace and personal factors associated with physical and mental health in hospital nurses in China. Nurs Heal Sci 2007; 9(2): 120-126. doi: 10.1111/j.1442-2018.2007.00316.x.
14. Rizzo JR, House RJ, Lirtzman SI. Role Conflict and Ambiguity in Complex Organizations. Adm Sci Q 2006. doi: 10.2307/2391486.
15. Cao X, Chen L, Tian L, Diao Y, Hu X. Effect of professional self-concept on burnout among community health nurses in Chengdu, China: The mediator role of organisational commitment. J Clin Nurs 2015; 24(19-20): 2907-2915. doi: 10.1111/jocn.12915.
16. Posig M, Kickul J. Extending Our Understanding of Burnout: Test of an Integrated Model in Nonservice Occupations. J Occup Health Psychol 2003; 8(1): 3-19. doi: 10.1037/1076-8998.8.1.3.
17. Chu CI, Lee MS, Hsu HM. The impact of social support and job stress on public health nurses' organizational citizenship behaviors in rural Taiwan. Public Health Nurs 2006; 23(6): 496-505. doi: 10.1111/j.1525-1446.2006.00599.x.
18. Kahn WA. Psychological Conditions of Personal Engagement and Disengagement at Work. Acad Manag J 1990; 33(4): 692-724. doi: 10.5465/256287.
19. Kahn WA. To Be Fully There: Psychological Presence at Work. Hum Relations 1992; 45(4): 321-349. doi: 10.1177/001872679204500402.
20. Schaufeli WB, Salanova M, González-Romá V, Bakker AB. The measurement of burnout and engagement: a simple confirmatory analytic approach. J Happiness Stud 2002; 3: 71–92. doi: 10.1023/A:1015630930326.
21. Lewis HS, Cunningham CJL. Linking nurse leadership and work characteristics to nurse burnout and engagement. Nurs Res 2016; 65(1): 13-23. doi: 10.1097/NNR.0000000000000130.
22. Demerouti E, Mostert K, Bakker AB. Burnout and Work Engagement: A Thorough Investigation of the Independency of Both Constructs. J Occup Health Psychol 2010; 15(3): 209-222. doi: 10.1037/a0019408.
23. Schaufeli WB, Bakker AB. Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. J Organ Behav 2004; 25(3): 293-315. doi: 10.1002/job.248.
24. Crawford ER, LePine JA, Rich BL. Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. J Appl Psychol 2010; 95(5): 834-848. doi: 10.1037/a0019364.
25. Cavanaugh MA, Boswell WR, Roehling M V., Boudreau JW. An empirical examination of self-reported work stress among U.S. managers. J Appl Psychol 2000; 85(1): 65-74. doi: 10.1037/0021-9010.85.1.65.
26. May DR, Gilson RL, Harter LM. The psychological conditions of meaningfulness, safety and availability and the en-

gagement of the human spirit at work. J Occup Organ Psychol 2004; 77(1): 11-37. doi: 10.1348/096317904322915892.
27. Porath CL, Erez A. Overlooked but not untouched: How rudeness reduces onlookers' performance on routine and creative tasks. Organ Behav Hum Decis Process 2009; 109(1): 29-44. doi: 10.1016/j.obhdp.2009.01.003.
28. Harter JK, Schmidt FL, Hayes TL. Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. J Appl Psychol 2002; 87(2): 268-279. doi: 10.1037/0021-9010.87.2.268.
29. Mañas MA, Díaz-Fúnez P, Pecino V, López-Liria R, Padilla D, Aguilar-Parra JM. Consequences of team job demands: Role ambiguity climate, affective engagement, and extra-role performance. Front Psychol 2018; 8. doi: 10.3389/fpsyg.2017.02292.
30. Marletta G, Caricati L, Mancini T, et al. Professione infermieristica: Stati dell'identità e soddisfazione lavorativa. Psicol della Salut 2014; (2): 139-157.
31. Fang Y. Turnover propensity and its causes among Singapore nurses: an empirical study. Int J Hum Resour Manag 2001; 12(5): 859-871. doi: 10.1080/713769669.
32. Caricati L, La Sala R, Marletta G, et al. Work climate, work values and professional commitment as predictors of job satisfaction in nurses. J Nurs Manag 2014; 22(8): 984-994. doi: 10.1111/jonm.12079.
33. Greenfield AC, Norman CS, Wier B. The effect of ethical orientation and professional commitment on earnings management behavior. J Bus Ethics 2008; 83(3): 419-434. doi: 10.1007/s10551-007-9629-4.
34. Bartunek JM. Intergroup relationships and quality improvement in healthcare. BMJ Qual Saf 2011; 20 Suppl 1(Suppl_1): i62-6. doi: 10.1136/bmjqs.2010.046169.
35. Caricati L, Guberti M, Borgognoni P, et al. The role of professional and team commitment in nurse-physician collaboration: A dual identity model perspective. J Interprof Care 2015; 29(5): 464-468. doi: 10.3109/13561820.2015.1016603.
36. Caricati L, Mancini T, Sollami A, et al. The role of professional and team commitments in nurse-physician collaboration. J Nurs Manag 2016; 24(2): E192-E200. doi: 10.1111/jonm.12323.
37. Reeves S, Lewin S, Espin S, Zwarenstein M. Interprofessional Teamwork for Health and Social Care 2010. doi: 10.1002/9781444325027.
38. Sollami A, Caricati L, Mancini T. Attitudes towards Interprofessional Education among Medical and Nursing Students: the Role of Professional Identification and Intergroup Contact. Curr Psychol 2017: 1-8. doi: 10.1007/s12144-017-9575-y.
39. Sollami A, Caricati L, Mancini T. Does the readiness for interprofessional education reflect students' dominance orientation and professional commitment? Evidence from a sample of nursing students. Nurse Educ Today 2018; 68: 141-145. doi: 10.1016/j.nedt.2018.06.009.
40. Rizzo JR, House RJ, Lirtzman SI. Role Conflict and Ambiguity in Complex Organizations. Adm Sci Q 1970; 15(2): 150-163. doi: 10.2307/2391486.
41. Maslach C, Leiter MP. Teacher Burnout: A Research Agenda. In: Vandenberghe R, Huberman AM, eds. Understanding and Preventing Teacher Burnout. Cambridge: Cambridge University Press; 1999: 295-303. doi: 10.1017/CBO9780511527784.021.
42. Balducci C, Fraccaroli F, Schaufeli WB. Psychometric properties of the Italian version of the Utrecht Work Engagement Scale (UWES-9): A cross-cultural analysis. Eur J Psychol Assess 2010; 26(2): 143-149. doi: 10.1027/1015-5759/a000020.
43. Schaufeli WB, Bakker AB. Utrecht Work Engagement Scale Preliminarty Manual. Occup Heal Psychol Unit -utr Univ. 2003. doi: 10.1037/t01350-000.
44. Wanous JP, Reichers AE, Hudy MJ. Overall job satisfaction: How good are singe-item measures? J Appl Psychol 1997; 82(2): 247-252. doi: 10.1037/0021-9010.82.2.247.
45. Panari C, Levati W, Alfieri E, Tonelli M, Bonini A, Artioli G. La mappatura del ruolo come nuovo approccio di lettura di due professionisti ospedalieri: l'infermiere e l'operatore socio-sanitario. MECOSAN 2015; (94): 67-95. doi: 10.3280/mesa2015-094005.
46. Panari C, Levati W, Bonini A, Tonelli M, Alfieri E, Artioli G. The ambiguous role of healthcare providers: A new perspective in human resources management. Acta Biomed 2016; 87: 49-60.
47. Schaufeli WB, Taris TW. A critical review of the job demands-resources model: Implications for improving work and health. In: Bridging Occupational, Organizational and Public Health: A Transdisciplinary Approach. Vol 9789400756; 2014: 43-68. doi: 10.1007/978-94-007-5640-3-4.
48. Rogalsky K, Doherty A, Paradis KF. Understanding the Sport Event Volunteer Experience: An Investigation of Role Ambiguity and Its Correlates. J Sport Manag 2016; 30(4): 453-469. doi: 10.1123/jsm.2015-0214.
49. Antón C. The impact of role stress on workers' behaviour through job satisfaction and organizational commitment. Int J Psychol 2009; 44(3): 187-194. doi: 10.1080/00207590701700511.

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Does student orientation improve nursing image and positively influence the enrolment of nursing students in the University? An observational study

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Abstract. *Background and aim of the study:* Nursing has not yet received full social recognition and in general the public opinion does not have a completely positive perception of it, which regards it as an auxiliary profession to the medical profession. This study aims to investigate the image of the nurse among year 4 and 5 high school students. *Methods:* Two groups of students were interviewed, one at their institution without any previous orientation (n = 102) and one at the University of Bologna during orientation day (n = 388). A validated questionnaire (Nursing Attitude Questionnaire) of 30 items was delivered. Two additional questions were added to explore the possibility of advising relatives and acquaintances to become a nurse and therefore to choose the nursing degree course. *Results:* All areas of the NAQ scored significantly higher in the group where students attended the orientation day, especially the ones related to the professional role, stereotypes and professional value items. Female students ≥ 21 had a more positive image of the nurse. Both groups recognized that nurses are important figures for patients and that they are intelligent people, who must have a degree in order to carry out their work duties. Differences between the groups were recorded. Students in group 1 did not accept nursing autonomy while students in group 2 understood differences between nursing and medical careers, attributing to them the same value. A positive correlation between the positive image of the nursing profession and the interest in becoming nurses or advising others to undertake the nursing course was found. In conclusion, orientation is effective in helping high school students in the choice of their university courses. Regarding nursing, strategies to improve the image of the nurse and enrollment should be combined during orientation day with current up to date communication and learning tools, such as social media and simulation laboratories. Furthermore, it appears increasingly important to extend orientation and tutoring activities to junior high school students, families and teachers. (www.actabiomedica.it)

Key words: nursing profession perception, high school students, orientation, Nursing Attitude Questionnaire

Introduction

The perception of the nurse has changed over time (1), provoking international debate (2). In particular, the public opinion does not have a fully positive perception of the nursing profession, considering it an auxiliary profession to the medical one (3, 4). On the contrary, other studies reported a positive image (5)

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focusing on the relationship between the nurse and the patient and his family, highlighting the importance of nurse educational, preventive and care role (6).

There are several reasons for the lack of full social recognition. Public opinion does not adequately know the evolution of the nursing profession (1), nor does it know that modern nursing is built on solid theoretical foundations (7). Most people do not adequately understand the nurse academic training, nor the specific skills needed for professional practice (4). Furthermore, the perceived value of the profession is strongly influenced by the mass media and more recently by social media (8, 9). For this reason, in the United States there are groups in charge of monitoring the type of image of the nursing profession conveyed by the media (8).

A distorted image of nursing care impacts on the quality and quantity of people who choose nursing as a profession (10). This is particularly relevant, in fact, for the low recruitment of males, since the media stereotype consider nursing a female profession and male nurses are associated with a negative image (11). Three specific reasons that make the nursing profession unattractive to young people, are: low wages, high workloads and poor career opportunities (4, 12) and in addition the lack of adequate social recognition (13). Young people believe that nurses perform difficult and even unpleasant tasks without receiving adequate rewards for their workload (14). However, some people have an awareness of the sacrifices and difficulties that nursing requires and this generates a sort of admiration and credit within society (15), which does not correspond to the real nurse role within the healthcare context (9, 10).

These contrasting visions, together with the profound change brought to the nursing profession by the Bologna Process (1999), underline the need for a deeper knowledge of the perception of nursing in Italy (16). In fact, several studies stress that the image of the nursing profession greatly influences the recruitment in the nursing profession itself (17, 18, 13) as well as the political, legislative decisions that have direct repercussions on the financing of nursing training and the recruitment in health services (11).

Among the factors leading young people to choose the nursing profession, there is a desire to help others (12) and to undertake a stable and economically secure profession (1, 19-24). Moreover, personal experience, such as having come into contact with nurses, or having family members in need of nursing care, are reasons that lead young people to choose the nursing profession (13). Personal contact with nurses or observing the nursing care of hospitalized family members was also cited as a reason for choosing the nursing profession (13, 20). Orientation given by the family and especially by the mother, appears to be another important element of choice (10). It has been also shown that the support of family members and friends is directly proportional to the capacity of the nursing profession to promote its public image (25).

University education has made access to the nursing profession more exclusive and it has created the conditions to make this profession more attractive to young people. Universities have developed specific trainings and career paths, in line with other non-medical health professions (26). The orientation organized by the universities is a very important event to promote a positive image of nursing as it is shown that a stereotyped image attracts students with a medium to low high school performance (27). Therefore, "The Millennials", who are ambitious (28), want recognition (29) and require flexibility in their work, are hardly attracted by this career choice (30). In order to improve the perception of the image of nurses, academic nurses must participate in public discussions, providing information about the theoretical and practical nursing training, degree of professional autonomy, the variety of activities, academic career paths and job opportunities, areas of personal satisfaction and contractual opportunities (10, 26, 31, 32).

Law and Arthur draw an identikit of the students who are most inclined to choose nursing and these are female students, who study biology and who have a positive perception of nursing (31). In fact, most aspiring nurses express a clear preference for the intrinsic rewards of the profession over extrinsic ones, such as low priority to financial and career rewards, more priority to the family and a high priority to work with people. This emphasis on the "ethics of caring" and on the social rewards of the nursing profession is most noticeable among women and to a lesser degree among men (33). Recruitment strategies must also be aimed

at attracting more male students. For this reason, Law and Arthur suggest involving successful male figures in guidance activities (31).

The perception of the nursing profession is linked to the recruitment and retention of nurses. For this reason, academic tutors and career days play a key role (32, 34, 35), especially with junior high school students (36), with families, with high school teachers (12, 34) and high school students who tend to identify themselves with successful TV show public figures (9, 37). Active use of social media, such as Twitter, Facebook and Instagram should be considered to increase the visibility of the nursing profession and share information (12).

Objective

The study aims to investigate the perception and opinion on the image of the nurse by students of year 4 and 5 in Italian secondary schools who attended a university orientation workshop for the University Degree Course in Nursing, taught by an academic nurse educator.

Methods

Design

A cross-sectional study was conducted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for observational studies (38).

Sample

A convenience sample consisting of 490 adult students attending year 4 and 5 of a technical and vocational college and secondary high schools. Students were divided into two groups: 1) students who were interviewed at their institutions without any previous orientation (9) and 2) students who participated in an orientation day about the nursing degree course. Group 2 was recruited at a meeting organized by the University of Bologna. On this occasion, an academic tutor illustrated the professional nursing profile, its duties, related job opportunities and the study plan of the course.

After being informed about the objectives and the design of the study, the participants voluntarily agreed to be interviewed by signing an informed consent. Consequently, the authorization to the bioethical committee was requested.

Instruments

The Nursing Attitude Questionnaire (NAQ) was used to assess the perceived image of the nurse. It was designed by Hoskins (39) and first adopted by Toth (40) to evaluate the image of the nurse perceived by certain groups of people, such as common citizens, nursing students and high school students (39, 40). The questionnaire consists of 30 items with a Likert scale ranging from 1 (strongly disagree), 2 (moderately disagree), 3 (neutral), 4 (moderately agreed) to 5 (strongly agreed). The questionnaire takes 10 minutes to complete and it explored the following five areas: professional role (10 items), professional values (7 items), stereotypes (6 items), professional activities (4 items), and nursing professional features and responsibilities (3 items).

Two summary questions have been added to the tool: 1) I would advise a relative / acquaintance to be a nurse; 2) I have an interest in choosing the nursing degree course. Participants expressed their level of agreement with these additional items on a Likert scale (range 1 to 5).

Total scores on the NAQ range from 30 to 150 points, with a high scores representing a more positive attitude toward nursing and low scores representing a less positive attitude toward nursing. Seven items were recoded before statistical analysis (40).

Data collection

Data were collected between July 2016 and January 2017.

Data analysis

The analysis was conducted with SPSS Version 24. The sample characteristics and the NAQ scores were analized through frequencies, percentages, in-

dices of central tendency (average, median) and dispersion measures (SD, range). The significance was calculated through the ANOVA and the t-test for the cardinal variables. The Spearman coefficient was used for correlations between ordinal variables. A p <0.05 was considered as statistically significant. The measure of the reliability of each test was determined by Cronbach's alpha.

Results

Table 1 summarizes the overall characteristics of the sample consisting of 490 subjects divided into two groups. Group 1 was made up of students who did not attend the orientation day (20.8%); 45.1% of these students was attending a technical college or a high school and 54.9% a vocational school. Group 2 was made up of the students who participated in the orientation day (79.1%) and 19.1% was attending a technical high school and 80.9% vocational school.

This population was made up of 66.3% female students, 79.7% were 18 years old and 58,9% were attending year 5.

Overall, 52.2% of the sample was hospitalized at least once, and 85% reported they had come in contact with a nurse at least once during their lifetime.

NAQ showed good reliability (Cronbach's α = 0.759), with values that differ from a α =, 660 in group 1 and a α =, 772 in group 2.

Table 1. Sample characteristics

	1 Group n = 102		2 Group n = 388		Total N = 490		
	n	%	n	%	N (%)	X^2	*P*
School attended						29,584	,000**
Technical / high school	46	45,1	74	19,1	120 (24,5)		
Vocational school	56	54,9	314	80,9	370 (75,5)		
Gender						62,782	,000**
Male	68	66,7	97	25,0	165 (33,7)		
Female	34	33,3	291	75,0	325 (66,3)		
Age						56,807	,000**
18 yrs	53	54,1	328	86,3	381 (79,7)		
19 yrs	22	22,4	36	9,5	58 (12,1)		
20 yrs	17	17,3	13	3,4	30 (6,3)		
≥ 21 yrs	6	6,1	3	0,8	9 (1,9)		
Year attended						6,33	,012*
Year 4	53	52,0	145	38,2	198 (41,1)		
Year 5	49	48,0	235	61,8	284 (58,9)		
Do you have any family members or acquaintances who are nurses?						9,552	,002**
Yes	44	43,1	230	60,2	274 (56,6)		
No	58	56,9	152	39,8	210 (43,4)		
Have you ever been to the hospital?						1,963	,161
Yes	55	53,9	179	46,1	234 (47,8)		
No	47	46,1	209	53,9	256 (52,2)		
Years since the last hospitalization						1,011	,603
< 1 yr	13	25,5	35	22,2	48 (23,0)		
1 a 3 yrs	15	29,4	39	24,7	54 (25,8)		
> 3 yrs	23	45,1	84	53,2	107 (51,2)		
Did you come in contact with a nurse?						3,174	,075
Yes	81	79,4	333	86,5	414 (85,0)		
No	21	20,6	52	13,5	73 (15,0)		

*p<0,05; ** p<0,01

Data analysis showed a statistically significant difference (p <0.05) between the NAQ scores detected in the two groups, with higher values (110.3) found in the second group in students aged ≥ 21 years and lower values (98.2) in the students of the group 1 attending vocational schools. Overall, women reported a higher NAQ mean score than males (109.2 [DS 8.4] and 101.9 [SD 10.2], respectively (Table 2).

In all areas of NAQ there were differences in the two groups (p <0.0001). Group 2 obtained a significantly higher score overall (108.4 [SD 9.2] vs 100.3 [SD 8.7]) with a range of difference of average values within the single areas ranging from 0,82 in the *Item Characteristic of nurses / nursing* at 2.89 in the *Professional Role* item. The statistical significance was also recorded in the two summary items. In the question *I am interested in choosing the degree course in nursing* the score of 2.00 (SD 1.158) recorded in the first group grew to 3.14 (SD 1.188) by registering an average increase of +1.14 (table 3).

Other elements have influenced the perception that students had of the figure of the nurse. In fact, among students who had a nurse in the family member or knew a nurse the score was significantly higher (108.1 [SD 8.8] vs 105 [SD 10.5] (p <0.001). This was also evident among the students who were hospital-

Table 2. Groups comparison analysis of NAQ scores

	Group 1 n = 102		Group 2 n = 388		Total N = 490	
	M±SD	P	M±SD	P	M±SD	P
Age		,560		,336		,003**
18 yrs	101,15±9,01		108,65±9,17		107,61±9,50	
19 yrs	98,45±8,53		109,19±6,53		105,12±8,98	
20 yrs	99,65±5,55		104,15±12,36		101,60±9,24	
≥ 21 yrs	102,83±13,68		110,33±3,06		105,33±11,55	
Gender			,008**		,000**	,000**
Male	98,85±8,51		104,07±10,77		101,92±10,20	
Female	103,87±8,23		109,84±8,30		109,28±8,46	
School		,010*		,323		,000**
Technical/High	102,76±8,43		108,65±9,18		107,90±9,29	
Vocational	98,29±8,47		107,46±9,81		103,67±10,30	
Year attended		,203		,069		,086
Year 4	101,51±7,32		107,35±10,39		105,88±10,02	
Year 5	99,27±9,83		109,12±8,38		107,42±9,40	

*p<0,05; ** p<0,01

Table 3. Comparison analysis NAQ area

		Group 1	Group 2			
	R	M±SD		Difference	t	*P*
Professional role	10-50	33,79±3,983	36,68±3,748	2,89	-6,761	,000**
Professional values	7-35	20,98±2,854	22,44±2,935	1,46	-4,422	,000**
Stereotypes	6-30	19,78±2,456	21,61±2,556	1,83	-6,395	,000**
Professionalism	4-20	15,32±2,152	16,32±2,179	1	-4,100	,000**
Characteristic of nurses/nursing	3-15	10,53±1,840	11,35±1,817	0,82	-3,974	,000**
Total NAQ	30-150	100,39±8,700	108,40±9,260	8,01	-7,752	,000**
I would advise a relative / acquaintance to be a nurse	1 - 5	3,26±1,096	3,63±,934	0,37	-3,452	,001**
I am interested in choosing a nursing degree course	1 - 5	2,00±1,158	3,14±1,182	1,14	-8,598	,000**

** p<0,01

ized at least once (107.6 [SD 9.2 vs 105.9 [SD 10.1]) (p <0.05) and the students who came in contact with nurses (107.2 [SD 9.2] vs 104.6 [SD 11.7]) (p <0.05) (Table 4).

The items whose mean values were higher than the 90th percentile corresponded to the following statements:

1. Nurses represent a personal resource for people with health problems (Group 1);
2. The most important goal of nursing research is to improve patient care (Group 2);
3. Being a nurse requires intelligence (Group 1 & 2);
4. Nurses should have a degree in order to do their job(Group 1 & 2).

In contrast, the items whose mean values were lower than the 10th percentile corresponded to the following statements:

5. Nurses are politically active (Group 1);
6. Nurses are able to operate independently (Group 1);
7. If nurses spent more time caring for patients and less at school, everyone would benefit (Group 2);
8. Many nurses who seek advancement in their professional career would rather be doctors instead (Group 2);
9. One of the advantages of being a nurse is to marry a doctor (Group 1 and 2).

Table 4. Analysis of additional items

	1 Group n = 102		2 Group n = 388		Total N = 490	
	M±SD	P	M±SD	P	M±SD	P
Do you have any family members or acquaintances who are nurses?		,045*		,055		.001**
Yes	101,37±8,48		109,22±8,52		108,14±8,86	
No	98,84±8,63		107,36±10,33		105,09±10,58	
Have you ever been to the hospital?		,013*		,616		,045*
Yes	98,47±7,97		108,19±9,62		105,91±10,12	
No	102,84±9,06		108,67±9,01		107,67±9,27	
Did you come in contact with a nurse?		,031*		,516		,037*
Si	101,35±8,03		108,61±9,03		107,23±9,29	
No	96,65±10,33		107,71±10,84		104,64±11,74	

*p<0,05; ** p<0,01

Table 5. Items with the highest disagreement among the categories (over the 90th percentile)

Item	Group 1	Group 2
10% higher	M±SD	
Nurses should have a degree in order to their job	4,08±1,123	
Nurses are a personal resource for people with health problems	4,07±,791	
The most important goal of nursing research is to improve patient care		4,29±,682
Nurses should have a degree in order to do their job		4,20±,879
Being a nurse requires intelligence	4,15±,813	4,19±,840
Less than 10%		
Nurses are able to operate independently	2,72±,989	
Nurses are politically active	2,92±,864	
If nurses spent more time caring for patients and less at school, everyone would benefit		2,60±1,026
Many nurses looking for progress in their professional career would rather be doctors instead		2,62±,993
One of the advantages of being a nurse is to marry a doctor	1,93±1,188	1,68±1,065

Tabella 6. Partial correlation between NAQ scores and item A & B

		A	B
NAQ Scores	**A** I would advise a relative/acquaintance to be a nurse	1	0,458**
	B I have an interest in choosing the nursing degree course	0,458**	1

** p < 0,01

The correlation between the perception of the image of the nurse and the question that explores student interest in undertaking a nursing course has shown opposite results. While in group 1 the two variables correlate poorly (Spearman Rho = 0.183; p> 0.05) (9), in group 2 the results obtained on the image of professionals correlate well with the choice to undertake the nursing course (Spearman Rho = 0.332; p <0.01). The positive effects of the orientation in the choice of the course of study is also confirmed in the calculation of the partial correlation, which highlights a direct relationship between the image of the nursing profession and the interest in becoming nurses or suggesting others to undertake the course of studies in nursing (Table 6).

Discussion

The results of the study show that the orientation significantly influenced the perception of the image of the nurse in the population of this study. In particular, students who were ≥ 21 years old and female, expressed a more positive opinion. This could depend on the fact that women are generally more empathic than males, a personality trait playing a key role in nursing care (9). The literature has shown that females are more inclined than males to choose nursing as a future profession (27, 32, 41).

All areas of the NAQ were significantly improved in the group 2, especially professional role, stereotypes and professional value items. The results could be related to the type of information the students received. In fact, at the orientation day, the academic nurse educator, before explaining the nursing degree course, focused participants' attention on the nurse profile, on professional autonomy, describing the activities that the nurse carries out daily in the various clinical, organizational and training contexts. Each of the activities described was accompanied by an example taken from real life. This communicative model aims at fostering prospective students' motivations and at the same time at avoiding misperceptions about the work of the nurse (3, 10). Additional elements that were discussed during the presentation were the various career developments in the university, clinical, and organizational areas; upgrading of nursing competences; modes of integration with other health professions; personal satisfaction; job opportunities in public and private health workplaces or in cooperative or freelance work. (1, 7, 10, 12, 31). Furthermore, during the orientation, information was provided regarding the nursing degree course, the teaching methods, organization of laboratories and types of internships (42).

In addition, in the items investigating whether the student would recommend the nursing degree course and if he/she intended to choose the course there was a significant improvement compared to group 1. In particular, a correlation between the positive image of the nursing profession and the interest in becoming nurses or suggesting others to undertake the nursing course was found.

However, the neutral result [3,14 (SD 1,182)] on the intention to enroll in the nursing degree course compared to the open opposition to enroll in such a course expressed in group 1 could depend on the attempt to question in a short time stereotypes which have been part of the nurse public image for a long time. This result is in agreement with the study by Matutina et al. (36), in which the authors suggest targeting also on junior high school students during orientation, including their teachers and family members. In fact, at this age, students begin to explore potential career options and to discuss their future with teachers, trying to form an idea of what they can do "when they grow up" (32).

Porter et al. (43) and Neilson & McNally (44) have demonstrated through a school-work project that pairing up a student with a nurse improves the image of the nurse and motivates the student to undertake the nursing degree course. Another strategy to motivate students to choose the nursing course could be to promote greater coordination with educational institutions allowing students to attend simulation activities carried out in nursing laboratories at universities (44). The laboratories, in fact, allow the prospective nurse to use their theoretical knowldedge in a safe environment that simulates clinical training and with good student satisfaction (45, 46, 47). This teaching method could promote and deepen the insight high school students might have into the work of a nurse.

Furthermore, the use by the university and nursing organizations of social media could give added value to improve the image of the nurse and encourage young people to choose this profession (12). Advertising campaigns also proved to be very successful in the recruitment of young students with excellent grades (35). This is confirmed by the world of entertainment, in which VIPs would be inclined to play the role of nurse if nurses were able to promote their image and if the media spread a good opinion of the nursing profession (9). This also would positively affect the public image of the nurse among young people who are sensitive to the mass media models (48).

Students who have been hospitalized or those who know a nurse have a good image of the nursing profession, which was shown by significantly higher cores in both groups. These results are confirmed by previous studies in which students who have a nurse in the family have a good perception of the nursing profession (31). Both groups valued the primary characteristics of nurses, which were defined as important figures for patients and intelligent people, who must have a degree in order to do their job. Since students recognized nursing as a science, group 2 emphasized the importance of nursing research in improving patient care. In contrast, questions with an average value below the 10th percentile show better the differences between the two groups after orientation. In fact, students in group 1 did not recognize nursing autonomy and the possibility that nurses might be politically active. Students in group 2, instead, showed disagreement with some stereotypes related to the nursing profession. These students recognized the role of basic and post-basic education and the differences existing between nursing and medical careers, attributing to them the same value, in contrast to what was reported in the literature (27, 34, 41, 44). Both groups strongly disagreed with the statement that one of the advantages of being a nurse is to marry a doctor.

Conclusions

According to the results of this study, the image of nurses is overall positive. Both groups of participants are aware of the fact that nurses must hold a degree in order to work and that they are educated healthcare professionals. High school students consider the nursing profession as a valuable resource for the national healthcare system. The participants in this study, after taking part in the orientation day, acknowledge the importance of research in the nursing field. However, the idea that nurses only operate as auxiliaries to doctors is still partially rooted in the popular culture. Furthermore, it is worth noticing that participants in both groups do not consider marrying a doctor as one of the possible advantages of being a nurse. This openly contradicts what has been portrayed in last century movies (48).

The results of this research show that orientation is essential and effective for high school students in guiding their choice of a university degree. This is especially true for the nursing degree course, considering how debated the image of the nurse is in society. Therefore, a greater coordination among universities, educational institutions and nursing colleges is advocated in order to promote the nursing profession by using a more modern and effective communication approach that will include mass media and social networks. An improved image of the nurse could also be achieved by involving junior high school students and teachers in simulation activities performed in university laboratories and in educational projects carried out by community nurses, in which students' families can also be involved. These activities are a good compromise between a more formal orientation day and the school-to-work project experiences (43, 44).

Limitations of the study

A limitation of this study is the type of sampling, which is not of a probabilistic but a convenience sample, therefore the results cannot be generalized. Another limitation could be in the answers given by students during orientation , which might have been misleading due to their lack of interest in participating in this research and due to the fact they might have been in a hurry in order to take part in other presentations organized by other health care professions presenting during the same event.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

References

1. Hoeve YT, Jansen G, Roodbol P. The nursing profession: public image, self-concept and professional identity. A discussion paper. J Adv Nurs 2014; 70(2): 295-309
2. Dignani L, Montanari P, Dante A, Guarinoni MG, Petrucci C, Lancia L. L'immagine dell'infermiere in Italia: analisi dell'archivio strorico di un quotidiano nazionale [The nursing image in Italy: an analysis of the historic archive of National newspaper]. Prof Inferm 2014 Jan-Mar; 67(1): 49-54
3. Marcinowicz L, Owlasiuk A, Slusarska B, Zarzycka D, Pawlikowska T. Choice and perception of the nursing profession from the perspective of Polish nursing students: a focus group study. BMC Med Educ 2016; 16(1): 243
4. Morris-Thompson T, Shepherd J, Plata R, Marks-Maran D. Diversity, fulfilment and privilege: the image of nursing. J Nurs Manag 2011; 19(5): 683-92
5. Takase M, Kershaw E, Burt l. Nurseenvironment misfit and nursing practice. J Adv Nurs, 2001; 35(6): 819-26
6. Cipolla C, Artioli G. La professionalità del care infermieristico. Milano: ed. Franco Angeli 2005; pag 13.
7. Dominiak MC. The concept of branding: is it relevant to nursing ? Nurs Sci Q 2004; 17(4): 295-300.
8. Kelly J, Fealy GM, Watson R.. The image of you: constructing nursing identities in YouTube. J Adv Nurs 2012; 68(8), 1804-13
9. Rubbi I, Cremonini V, Artioli G, Lenzini A, Talenti I, Caponnetto V, La Cerra C, Petrucci C, Lancia L. The public perception of nurses. An Italian cross-sectional study. Acta Biomed 2017; 88(S5): 31-38
10. Glerean N, Hupli M, Talman K, Haavisto E. Perception of nursing profession – focus group interview among applicants to nursing education. Scand Caring Sci 2019; jan 3
11. Kalisch BJ, Begeny S, Neumann S. The image of the nurse on the internet. Nurs Outlook 2007; 55(4):182-188
12. Glerean N, Hupli M, Talman K, Haavisto E. Young peoples' perceptions of the nursing profession: an integrative review. Nurse Educ Today 2017; 57: 95-102
13. Beck U. The cosmopolitan perspective: sociology of the second age of modernity. Br J Sociol 2000; 51(1): 79-105
14. Koholer PA, Edwards TA. High School students' perceptions of nursing as a career choice. J Nurs Educ 1990; 29(1): 79-105
15. Gallup. Honesty/Ethics in Professions. 2016. Available from: http://www.gallup.com/poll/1654/honestyethicsprofessions.aspx
16. Wächter B. The Bologna Process: Developments and Prospects. Eur J Educ 2004; 39(3): 265-273
17. Stevens KA, Walker EA. Choosing a career: Why not nursing for more high school seniors? J Nurs Educ 1993; 32 (1): 13-17
18. Wilson CS, Mitchell BS. Nursing 2000: collaboration to promote careers in registered nursing. Nurs Outlook 1999; 47(2): 56-61
19. Boughn S. Why do men choose nursing? Nurs Health Care 1994; 15(8): 406–411
20. Williams B, Wertenberger DH, Gushuliak T. Why students choose nursing. J Nurs Educ 1997; 36(7): 346-348
21. Boughn S, Lentini A. Why do women choose nursing? J Nurs Educ 1999; 38(4), 156-161
22. Hemsley-Brown J, Foskett NH. Career desirability: young people's perceptions of nursing as a career. J Adv Nurs 1999; 29(6): 1342-1350
23. Rognstad MK. Recruitment to and motivation for nursing education and the nursing profession. J Nurs Educ 2002; 41(7): 321-325
24. Haron Y, Reicher S, Riba S. Factors influencing nursing career choices and choice of study program. Health Mark Q 2014; 31: 167-177
25. Weaver R, Salamonson Y, Koch J, Jackson D. Nursing on television: student perceptions of television's role in public image, recruitment and education. J Adv Nurs 2013; 69(12): 2635-2643
26. Neilson GR, Lauder W. What do high academic achieving school pupils really think about a career in nursing: Analysis of the narrative from paradigmatic case interviews. Nurse Educ Today 2008; 28: 680-690
27. Neilson GR, Jones MC. What predicts the selection of nursing as a career choice in 5th and 6th year school students?. Nurse Educ Today 2012; 32: 588-593
28. Boychuk Duchscher JE, Cowin L. Multigenerational nurses in the workplace. J Nurs Adm 2004; 34: 493-501
29. Clendon J, Walker L. Being young: a qualitative study of youngernurses' experiences in the workplace. Int Nurs Rev 2012; 59: 555-561
30. Lavoie-Tremblay M, Leclere E, Marchionni C, Drevniok U. The needs and expectations of generation Y nurses in the workplace. J Nurses Staff Dev 2010; 26: 10
31. Law W, Arthur D. What factors influence Hong Kong

school students in their choice of a career in nursing?. Int J Nurs Stud 2003; 40: 23-32
32. Hoke JL. Promoting nursing as a career choice. Nurs Econ 2006; 24(2): 94-101
33. Dockery AM, Barns A. Who'd be a nurse? Some evidence on career choice in Australia. Aust Bull Labour 2005; 31: 350-382
34. Campbell-Heider N, Sackett K, Whistler P. Connecting with guidance counselors to enhance recruitment into nursing of minority teens. J Prof Nurs 2008; 24(6): 378-384
35. Johnson & Johnson. Discover Nursing, the campaign for nursing's future. (Retrieved 21 January, 2017, from). http://www.discovernursing.com
36. Matutina RE, Newman SD, Jenkins CM. Measurement of Students' Perceptions of Nursing as a Career. J Nurs Scholarsh 2010; 42(3): 319-329
37. Shatto B, Erwin K. Moving on from millennials: preparing for generation Z. J. Contin Educ Nurs 2016; 47(6): 253-254;
38. Vandenbrouckel JP, von Elm E, Altman DG, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): explanation and elaboration. PLoS Med 2007; 4(10): 1628-55.
39. Hoskins L. View of Nursing Questionnaire [mimeograph]. Washington: The Catholic University of America, 1983
40. Toth JC, Dobratz MA, Boni MS. Attitude toward nursing of students earning a second degree and traditional baccalaureate students: are they different? Nurs Outlook 1998; 46(6): 273-8
41. Whitehead E, Mason T, Ellis J. The future of nursing: career choices in potential student nurses. Br. J. Nurs. 2007; 16 (8): 491–496
42. Yilmaz AA, Ilce A, Cicek SC, Yuzden GE, Yigit U. The effect of a career activity on the students' perception of the nursing profession and their career plan: A single-group experimental study. Nurse Educ Today 2016; 39: 176-180
43. Porter G, Edwards PB, Granger BB. Stagnant Perceptions of Nursing Among High School Students: Results of a Shadowing Intervention Study. J Prof Nurs 2009; 25(4): 227-233.
44. Neilson G, McNally J. The negative influence of significant others on high academic achieving school pupils' choice of nursing as a career. Nurse Educ. Today 2013; 33 (3): 205–209
45. Cremonini V, Ferri P, Artioli G, Leopoldo S, Piccioni E, Rubbi I. Nursing students' experiences of and satisfaction with the clinical learning environment: the role of educational models in the simulation laboratory and in clinical practice. Acta Biomed 2015; 86(S3): 194-204
46. Rubbi I, Ferri P, Andreina G, Cremonini V. Learning in clinical simulation: observational study on satisfaction perceived by students of nursing. Prof Inferm 2016; 69(2): 84-94
47. Rubbi I, Cremonini V, Butuc A, Cortini C, Artioli G, Bonacaro A, Pasquinelli G. Incidence and type of health care associated injuries among nursing students: an experience in northern Italy. Acta Biomed 2018; 89(S7): 41-49
48. Gelsi S. Lo schermo in camice bianco. L'immagine sociale dell'infermiere [Nurse social image] 2002: 11-6.

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Nursing students' perception of the quality of clinical learning: a mixed methods inquiry

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Abstract. *Background and aim:* As part of the Nursing Degree Course, the "internship" period represents a strategic lever to systemize the fundamental combination of theoretical study and nursing practice. However, only a few studies have examined in depth students' perception of this experience. The aim of the study was to assess the quality of the places in which the University of Parma's Nursing students did their internships based on their experience. *Methods:* Through a quantitative and qualitative study, students who had completed at least one clinical internship (n.200) were asked to fill out a self-report questionnaire on the quality of learning using the CLEQUEI scale (1) and answer a few social and demographical questions. In addition to the questionnaire, 24 narrative interviews (semi-structured) were conducted; these interviews deepened the significance of the assigned internship experience. *Results:* Throughout all the clinical contexts that were analyzed, the dimension of the perceived quality of the internship averaged a value ≥ 44 (the minimum cut-off indicating the presence of necessary elements to promote the processes of quality clinical learning). The perceived quality dimension particularly stands out in the Pediatric Area, in which it amounted to a mean value of 66 (close to the maximum cut-off value of > 66). This result indicates the opportunity to further develop the processes used in students' quality clinical learning. The latter describe the internship as a moment of both personal and professional growth of fundamental importance in one's own training process. *Conclusions:* Overall, the University of Parma's Nursing students have a good perception of the quality of clinical learning. The significance of assigned internship presents some elements which are a relevant part of the new paradigm. However, there are still some aspects which need improvement, such as the necessity to reevaluate certain parts of the teaching organization of the professionalizing activities and of the clinical internships throughout the duration of the three-year course. (www.actabiomedica.it)

Key words: clinical learning, clinical learning quality, clinical teaching model, student education, collaborative model, learning environment, learning experience

Introduction

There is great interest, both nation-wide and at European level, about the qualification of the internship as a privileged channel for entering the job market and to systematize the joining between work and professional training. Thus it shouldn't only be employed in the years at the end of training, but also in the earlier years and during curricular internships which are integrating part of nurses' three-year training.

Today's new cultural prospect about the internship underlined the importance that it has to be the designated moment for the integration of disciplinary contents, theoretical knowledge and the practical students' skills. For this reason the internship is creating a great deal of interest both in Italy and in Europe. The

cultural prospect concealed by the university internship leaves the previous idea of development of practical skills as the only pragmatic and applied approach for the future nurse. Instead, it engages a reflexive thinking it in a more project-oriented dimension for the aspiring healthcare professional (2). He is guided towards the awareness of the complexity of the areas in which healthcare professionals operate both today and in the future.

Therefore, it is advisable to organize the clinical learning context as a privileged and ideal setting oriented towards quality internship courses It start from the evaluation and monitoring of elements appropriately arranged for substantial training which should be an opportunity for learning both in a group and alone. It also uses innovative tutorial strategies also oriented towards problem based learning and guarantes professional involvement based on safety and the quality of care (2).

It is known that in order to work well in a certain context there has to be a responsible deployment of all personal abilities even in places in which knowledge in used both theoretically and practically.

The challenge is to adequately place knowledge in the real context in which the problem arises (3).

To imagine that this responsible and informed placement should exclusively mature in classroom and in university laboratories is impossible. First of all, a continuous contribution of psychological and sociological theories corroborates the now widespread awareness that the larger part of one's knowledge, particularly young people, is acquired in informal settings.

Secondly, the application of a single pedagogical perspective of a person's learning inevitably leads to setting up a training system that opens its doors to the job market, and, with an important investment in practical experience, the future nurse acquires a mindset for a stable work environment, and the importance of combining reflection with practical application. Third, the front-line training prospective pushes towards the reiteration of the education model for the internship in which both student and the healthcare professional are involved. Despite the asymmetry of their roles, they discover what goes on in observed professional behaviors. This allows us to determine which, among said behaviors, can be accepted as human actions, characterized by intent, lógos, liberty and responsibility, or which, on the contrary, are mechanical, automatic, routine actions of which one needs to be a mindful executor (4).

For all of these reasons, In this paper we aim to analyze the internship path, including all its particular variants and beginning with the curricular laboratories.

The survey methodology involves the use of assessment tools that investigate the experience of students. In our country several are used, mainly to measure the quality of clinical training environments: some were developed in the Italian context, others were borrowed from other countries after extensive validation processes.

However, at a national level, the processes used to organize internships are quite different and many are yet to be documented (4). Such instruments have been appreciated for their positive characteristics, but in time they have also shown some weaknesses, including the scarce ability to evaluate performance outcomes, meant as the assessment of the training program's efficiency and the student's fulfillment.

Furthermore, there seem to be no attempts made to investigate how the students perceive the internship proposed by the new paradigm.

Aim

The aim of this study was to analyze:
- The nursing students' experience of the internship in clinical learning settings;
- representation of the internship and the meaning the students attribute to it.

Methods

The research design was a mixed method approach (both qualitative and quantitative): observational, phenomenological, and hermeneutical.

Criteria for the recruitment of the participants

As prescribed by the guidelines written by the authors of the CLEQEI scale, the criteria of inclusion were: students attending the first, second or third year

of the degree program; students who have finished at least one internship in a clinical setting and have taken a final exam on that experience; students who were attending from 2014/2015 to 2017/2018.

The criteria of exclusion were: students who took part in an observational internship, since they didn't develop the inquired skills; students who had paused their internship period; students who didn't give their consent to participate in the study.

The students were recruited according to a convenience sampling.

Instruments

Two different tools were used to collect data:

1) A self-report questionnaire, which looks into the perception of the quality of clinical learning through the CLEQEI scale, "Clinical Learning Quality Evaluation Index" (2). The period it refers to, as recommended by the authors' guidelines, refers to the last internship the student finished. The tool consists of 22 items, which outline five main elements that are: quality of the tutoring strategies (6 items), opportunities to learn (6 items), safety and quality of care (4 items), self-learning (3 items) and quality of the learning setting (3 items). The questionnaire is based on a Likert type scale with a score that ranges from 0 (not at all) to 3 (very much) with intermediate values (1,2=enough, quite a few). The total score ranges from 0 (absence of necessary elements to promote a quality clinical learning process) to 66 (high presence). The tool questionnaire proceeded to inquire aboutinvestigates also students' social and demographical variables (i.e. gender, age, education, year attended of the course), university and work experiences, including internships, the type of setting in which it was, the most frequent type of internship (i.e. with a tutor or with a group).

2) The interview, a narrative semi-structured interview was built ad hoc (7) and it was so structured: a start question in order to aid the student in familiarizing with the setting ("how are you doing?"), a stimulus question to open the conversation ("please, tell me about your internship experience"); central questions which inquired about the meaning of the interview (i.e. "which are the characteristics that an internship should have?") and a final question ("would you like to tell us something else you deem useful in a clinical internship setting?").

Data analysis

The statistical analysis was conducted by using the program IBM SPSS *Statistics* 25th version (5). The continuous variables are presented as media ± standard deviation, while the categorical variables, as numbers and percentages.

The significance between continuous variables, after making sure that the sample was being distributed normally, was analyzed by using parametric statistics after a pre-test to evaluate the homogeneity of the variances.

Pearson's correlation test was used in order to analyze the correlations between investigated elements and other variables (gender, not terminated university experiences, etc.).

According to the results of the factorial analysis synthesis indicators for each dimension were constructed: quality of the tutoring strategies (α=0.85), learning opportunities (α=0.87), safety and quality of care (α=0.76), teaching oneself (α=0.83), quality of the settings for learning (α=0.88). Each indicator contains the questions pertaining to its specific area. The psychometric properties of the instrument were good (<=0.93).

The interviews were recorded and have been transcribed using a voice-to-speech verbatim tool. In addition to the spoken text, pauses, sighs, emotion and changes in the voice of the participants were noted. After the transcription of each narration, a two-level analysis was conducted.

The first level analyzed the thematic content through the careful reading of the transcription, breaking down the communicative unit of each narration in simpler segments (sentences) and a subsequent categorization (A, B, C, D, and E) and sub-categorization for a quick reference of the investigated topics: *the meaning given to the assigned internship by the student, the characteristics of the student, the student's role during the apprenticeship, considerations on clinical internships, aspects of the clinical internships that could be improved.*

Afterwards, we calculated the frequency of each subcategory in the narrative and a global evaluation

using the data triangulation technique. Only the results that reached a unanimous agreement among the researchers in the attribution of categories and subcategories were included. A second level analysis counted the word most often repeated during the interviews by using the Word Counter software developed on an OsX platform (8).

The use of a computer program made it possible to obtain different types of indexes, such as vocabulary variety, the frequency and the co-occurrence of words.

Grids to organize the objectives and research questions were designed by using three different strategies:

1) The binary coding, which indicates if the category appears in the analysis unit or not;
2) The indication of frequency with which the category appears;
3) The indication of the strength or intensity with which the category is represented.

Each category was given a numerical value in relation to the analysis of the content. The calculation of such value was based on elements such as semiotics, the grammatical elements of the linguistic structure (words, prepositions, and statements) to interpret and analyze information derived from the transcription of the recorded interviews.

Ethical considerations

The research protocol was approved by the President of the Degree Course in Nursing at the University of Parma and by the Directors of the Professionalizing Education Activities of Parma and Fidenza.

To consent to the study, the participants signed a document with an informative section and while the other was reserved for the authorization of the processing of personal data according to regulations (12). The anonymous compilation of the quantitative information enabled students to freely express their opinions. Personal data was processed according to the current privacy policy. The audio recordings of the interviews were exclusively listened to by the researchers only for the purposes of this research and weren't divulged in any way or under any circumstance.

Participants

200/360 Nursing Degree Course students from the University of Parma participated in the quantitative study, while 24 participated in the qualitative one. Seventy-five percent was female (151) and 25% was male. Ninety-five percent of the students were Italian, . 28% (56) attended the first year, the 25% (50) the second year, and the 47% (94) the third year, 4% (2) of the participants were part of the 2014-2015 cohort, 33,5% (67) belonged to the 2015-2016 cohort, 30,5% (61) to the 2016-2017 cohort and 34% to the 2017-2018 cohort.

Among the participants, 84% were based in the Degree Course at the University of Parma Teaching Hospital's Local Sanitation Unit (USL), while 18% (36) belonged to the Local Sanitation Unit at the Fidenza Vaio Hospital and at the Borgotaro location.

Results

Questionnaire results

The first results concerned the learning quality among the students of the three-year course. The results demonstrated that there aren't any statistically significant differences between course year and certain elements such as "Quality of the tutoring strategies" (p=.179), "Learning opportunities" (p=.374), "Teaching oneself" (p=.340) and "Quality of the tutoring strategies" (p=.834). Instead, comparing it to the "Safety and quality of care" item, a statistically relevant difference emerged.

A second result regarded the perceived quality of students' learning in different clinical internship settings.

A mean value of each inquired element was calculated in relation to the clinical area in which the internship was done. Afterwards, an average of all investigated elements was estimated.

These results pointed out that the dimensions regarding perceived quality had a mean value of ≥44 (cut-off that indicates the presence of necessary elements to promote quality clinical learning processes in all the considered clinical settings).

Only the pediatric settings showed an average value close to the maximum cut-off (66) since all the considered items were related to the quality of learning, thus indicating an elevated presence of all the elements which stimulated the development of quality clinical learning processes in the student (table 1).

Another interesting fact is that there were not any statistically relevant differences between the final evaluation of the internship course and the "Quality of tutoring strategies" (p=.975), "Learning opportunities" (p=.665), "Auto didactical learning" (p=.194), "Quality of the learning settings" (p=.961) and "Safety and quality of care" (p=.825).

Furthermore, social and demographical variables (age, gender, nationality) did not highlight any significant relation to the learning quality in clinical settings perceived by the students.

Finally there is not any correlation between tutoring model, investigated elements, and gender.

On average, students said they had the opportunity to meet with their tutors to evaluate their learning needs (table 2); however, 50/200 answered "not at all" when asked if they had that opportunity.

Interview results

The aspects pertaining to the macro-areas investigated during the interviews relate to the *internship characteristics* (65/244) and to the *internship related considerations* (63/244); in particular, most of the interviewed students (20/24) thought *politeness* and *humility* to be important and indispensable characteristics to be able to tackle and successfully complete the clinical internship experience.

Table 2. Meetings to evaluate learning needs (Frequency F percentage % _ N = 200)

Was I offered to have meetings to discuss my need during the learning process?				
	Frequency	Percentage	Value percentage	Cumulatin percentage
	1	,5	,5	,5
Enough	61	30,5	30,5	32,0
Many	34	17,0	17,0	48,0
Too many	54	27,0	27,0	75,0
None	50	25,0	25,0	100,0
Total	200	100,0	100,0	

For that which concerns *the meaning that the students attributed to the clinical internship*, they described it as an important experience, for both personal and professional growth, during their training process.

Some students (26/244) pointed out that they think the professional didactic activities should be reorganized and that there should be a more detailed description of clinical internships throughout the three year course.

These results helped to shed light on the experiences and the deeper meanings, as well as the representation that the student had of him-or-herself had during the clinical internship (table 3).

In the first part of the interviews the students, through free flowing thoughts, expressed their ideas regarding what they experienced during their internships.

Table 1. Quality dimensions of clinical learning in the different learning areas (Range of the scale 0-66 N=200)

Learning areas	Quality tutorial strategies (0-18)	Learning opportunities (0-18)	Safety and quality of care (0-12)	Self-learning (0-9)	Quality learning environment (0-9)	Total
Clinic	11,38	13,16	9,91	4,58	5,66	44,71
Territorial assistance	14,57	14,93	10,73	6,20	7,60	54,03
Surgery	13,50	13,66	9,5	5,00	6,66	48,33
Critical care/emergency department	13,25	12,25	8,00	4,00	8,25	45,75
Pediatrics	18,00	18,00	12,00	8,50	9,00	65,50
Medicine	13,38	14,87	8,93	5,73	7,56	50,48
Geriatrics	14,50	16,00	10,66	6,00	7,33	54,50
Other (psychiatry)	12,10	12,77	9,00	4,90	7,10	45,87
Total average	13,21	14,17	9,68	5,43	7,16	49,67

Table 3. Words repeated most frequently said by the participating students (Frequency F subjects) N = 24

Words	Frequency	Subjects
Tutor	68	24/24
Internship	58	24/24
Learning	11	13/24
Education	14	20/24
Need	13	11/24
Growth	7	9/24
Clinic	26	15/24
Student	42	24/24

From the information we gathered from the interviews, we have noticed that students deemed the experience "good" or "bad" in connection to the clinical tutor they were with. Thus, tutor training becomes prioritized as it is linked directly to the quantitative or qualitative increase which we mean to activate as part of curricular internship courses (table 4).

Some of the most important considerations were reported.

INTERVIEW 1: "*it was for the tutors to trust us students, I get it that they might have negative experiences, but if they don't trust the student that's with you, it becomes difficult for both of us to do what we need to. I clearly felt anxious in doing things: for example, if I had to give a patient an injection, with my clinical tutor almost overwhelmingly close saying things like 'do it this way, not like that', instead of thinking of what rules I had to keep in mind when giving a shot, like the 8 G's, I also had to think about how the tutor wanted me to do things. I think some tutors want you to do things how they do them and that's it, but we're not all the same!*"

INTERVIEW 2: "my internship experience was dictated by how my tutors were, it depended on what they made me love and hate about a certain ward/unit or what the nurse had to do in that setting…"

Feelings related to students' internship experiences, are quite an imporantt part of the interviews. The emotions helped us understand how students experience internships.

INTERVIEW 3: *"I felt part of something… of a team. I learned to deal with and speak to people…",*

"surely there are loads of emotions because I was already anxious to learn things correctly, but also because I had responsibilities, but it helped me a lot because I learned so much…",

"It's a difficult moment because you have to learn how to deal with a job for the first time, and for someone who has never done something like this it's quite difficult, but it repays you well both personally and professionally".

We asked the students a series of questions which helped us inquire about one of the objectives: "*the representation of the student during clinical internships*", . So

Table 4. Narrative semi-structured interview categories and sub-categories N=24

A: Meaning that the student gives to the internship training	A1: personal and professional growth	A2: educational experience	A3: sharing of emotions felt during the internship experience	
B: Characteristics useful for students during internships	B1: politeness and humility	B2: positive attitude	B3: availability to list	B4: reasons that support this experience
C: Student's role during the internship	C1: tutor coaching	C2: team collaboration		
D: training course consideration	D1: trained tutors	D2: tutor-student relationship	D3: clinical training teaching organization	
E: Aspects improved in future experiences	E1: setting as a good learning environment	E2: internship experience satisfaction		

we transcribed some of the most significant answers wereceived from students. We noticed that many interesting facts emerged from the investigated areas. Regarding the meaning of the clinical internship, a few students answered:

INTERVIEW 4: "*I think [the internship] it's the most important part of the degree course…*"; *"it's a fundamental educational moment";*

INTERVIEW 5: *"growth, maturation.. both professionally and personally*"; "*for me it was about practicing what they had taught us in the classroom, but even more if you apply what you study, and you try to do it well. In the end you are satisfied, and it validates what you've been doing up till now."*

Students then described what characteristics a person should have to do well inthe clinical internships, recognizing the importance of politeness, the ability to listen, interest, and humility.

INTERVIEW 6: *"Well, I think you should be polite, of course, you have to listen to advice, you can't impose yourself as a superior…"; "one should be very interested, humble… because without these two things it's difficult to make progress, they are fundamental for someone who wants to learn, to know and study in depth…"; "…you have to recognize your mistakes, you have to be curious and respect others…"; "the student should be pro-active, open to learning new things."*

We then asked students what they thought we should improve in the future about the internship program. We encountered some critiques regarding the organization of the first-year internship.

INTERVIEW 7: "*Yes, I insist there are some things which should be improved, I think the tutors you choose should want to tutor students and they should be trained to explain things appropriately, I mean they should be competent in this area, they should understand how a student's learning process works. I know that after a certain number of years you don't remember how you learned certain things yourself,"; "No, describing an internship as an observational activity should be reconsidered..."*

INTERVIEW 8: "*The first year the didactical organization was modified, but then you get to your second year and you're behind…"; "no, there are surely many things to improve, tutors should be motivated to teach students. I would like to use the Spanish or the English model in which the degree course lasts four years instead of only three, but you learn much more…"*

Discussion and conclusion

In both national and international literature, it is quite clear how the meaning of a nursing student's curricular internship has evolved as well as its purpose and its pedagogical foundations behind such activity (1).

It's legitimate to think that the attention given to internship programs also favors the quality of clinical learning.

The new internship paradigm carefully analyzes the "Principles and Standards of Professional Internships" document in relation to Degree programs in Healthcare. It's a perspective that leaves the idea of development of practical skills as the only pragmatic and applied orientation for a future nurse. In addition, it takes on reflective action and helps to realize the projected goals of the aspiring healthcare professional, who can then become aware of the complexity in which professionals work today and even more so in the future.

The research shows that students perceived their internship as a good experience in all clinical settings (outpatient/clinic, territorial care, surgery, critical area, pediatrics, medicine, geriatrics and psychiatry). In particular, learning and self-teaching opportunities were seen as innovative strategies which are oriented towards *problem based learning* and professional aid based on the safety and quality of care (8).

Only the pediatric setting presented an average value close to the maximum cut-off (66) thanks to the investigated factors on the quality of learning, indicating a high presence of all stimulating elements in the development of the quality of the student's clinical learning processes.

Generally the results are usefull to implement those programs which were oriented towards the development of certain aspects (i.e. educational strategies) so that each area of qualitative development can

be received by the students as highly significant and valuable from an educational point of view.

This theory of doing well in a work setting as a result of the abstract transmission of science even from a well-known and efficient "school" isn't a novelty. Actually, it asks for free and responsible mobilization of all personal abilities, and said mobilization can only take place in settings in which knowledge finds both a concrete and reflective realization.

Bruner remembers that the challenge we face is always that to put our knowledge in the real context in which the problem presents itself (9). At this point, it is impossible to imagine the university classroom without these outside placements to ensure the professional development of students.

Therefore, the quality of the experiences gives meaning to the time spent doing internships. According to what the students said, the abundance of educational activities offered, a rigorous projection and the carrying out these internships determine a quality learning.

So, it's necessary to find a useful balance between quality and quantity of these internships. In this way, confirming what emerged from scientific literature, students perceive the internship as a moment to grow both professionally and personally. Finding a useful balance between quality and quantity of the internships is of fundamental importance. We must also consider that it isn't enough that students complete the required number of attendance hours, but that they have fulfilled the satisfactory educational requirements in order to sanction the completion of the internship (10).

In the perspective of quality, personalized internship programs are recommended in order to consider students' need to increase the number of internship experiences in order to complete their professional training. At this point, tutorship training becomes a priority which is directly linked to the increase in quality and quantity that we intend to apply to future curricular internship programs. As some good practices of the degree courses in Healthcare stated, the training of university tutors and that of tutors of premises is understood as a shared training alliance between clinical settings and universities.

Without a valid tutoring system, indeed, we risk compromising the acquisition of reflexivity as an essential basis of clinical learning and the student is exposed to the risk of learning by imitating a non-critical and reflexive care practice. On the contrary, a good tutoring is based on the pedagogical model of the Socratic maieutic - in that it is oriented to helping the student "give birth to" solutions and proposals for assistance and care problems that he or she encounter- and it is centered on an active learner (11).

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

References

1. Fabbri L, Corbi E, Perillo P. La formazione e il carattere pratico della realtà. La formazione situata. Dispositivi per conoscere e coltivare gli apprendimenti informali [The surrounding formation. Devices for learning and cultivating informal learning]. Lecce: PensaMultimedia, 2014.
2. Palese A, et al. Lo strumento italiano di misurazione della qualità dell'apprendimento clinico degli studenti infermieri [The Italian tool for measuring the quality of clinical learning in nursing students]. Assist Inferm Ric 2017; 1.36: 41-50.
3. Bruner JS. Nuovi orizzonti per la scuola. La cultura dell'educazione [New horizons for school. The culture of education]. Feltrinelli Editore, 2000.
4. Palese A, et al. Strumento di Valutazione Italiano degli Ambienti di Tirocinio per gli studenti infermieri (SVIAT): protocollo di validazione [Italian Evaluation Tool for Internships for Nursing Students (SVIAT): validation protocol]. Assist Inferm Ric 2016; 35: 29-35.
5. IBM SPSS Statistics Version 25: Windows Installation Instructions (Authorized User License).
6. Canzan F, Marognolli O, Bevilacqua A, Defanti F, Ambrosi E, Cavada L. Una panoramica sui modelli di insegnamento e tutorato clinico degli studenti infermieri in tirocinio: revisione della letteratura. [An overview of teaching and clinical tutoring models for trainee nursing students: literature review]. Assist Inferm Ric 2017; 36: 7-13.
7. Chan D, et al. Development of the clinical learning environment inventory: using the theoretical framework of learning environment studies to assess nursing students' perceptions of the hospital as a learning environment. J Nurs Educ 2002, 41.2: 69-75.
8. Cicognani E, Albanesi C, Berti P. Psicologia della salute. Dimensioni del benessere sociale: applicazione di uno strumento di misurazione. [Dimensions of social well-being: a measurement instrument]. Franco Angeli, 2001.
9. Nicotera R, Altini P, Dimonte V. Un confronto degli strumenti più utilizzati per valutare la qualità degli ambienti di

apprendimento clinico degli studenti infermieri. [A comparison of the most used tools to assess the quality of clinical learning environments for nursing students]. Assist Inferm Ric 2017; 36.1: 31-40.
10. Yue M, Z, M. The effectiveness of concept mapping on development of critical thinking in nursing education: a systematic review and meta-analysis. Nurse Educ Today 2017, 52: 87-94.
11. Zannini L. La tutorship nella formazione degli adulti: uno sguardo pedagogico [Tutorship in adult education: a pedagogical perspective]. Guerini Scientifica, 2005.

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