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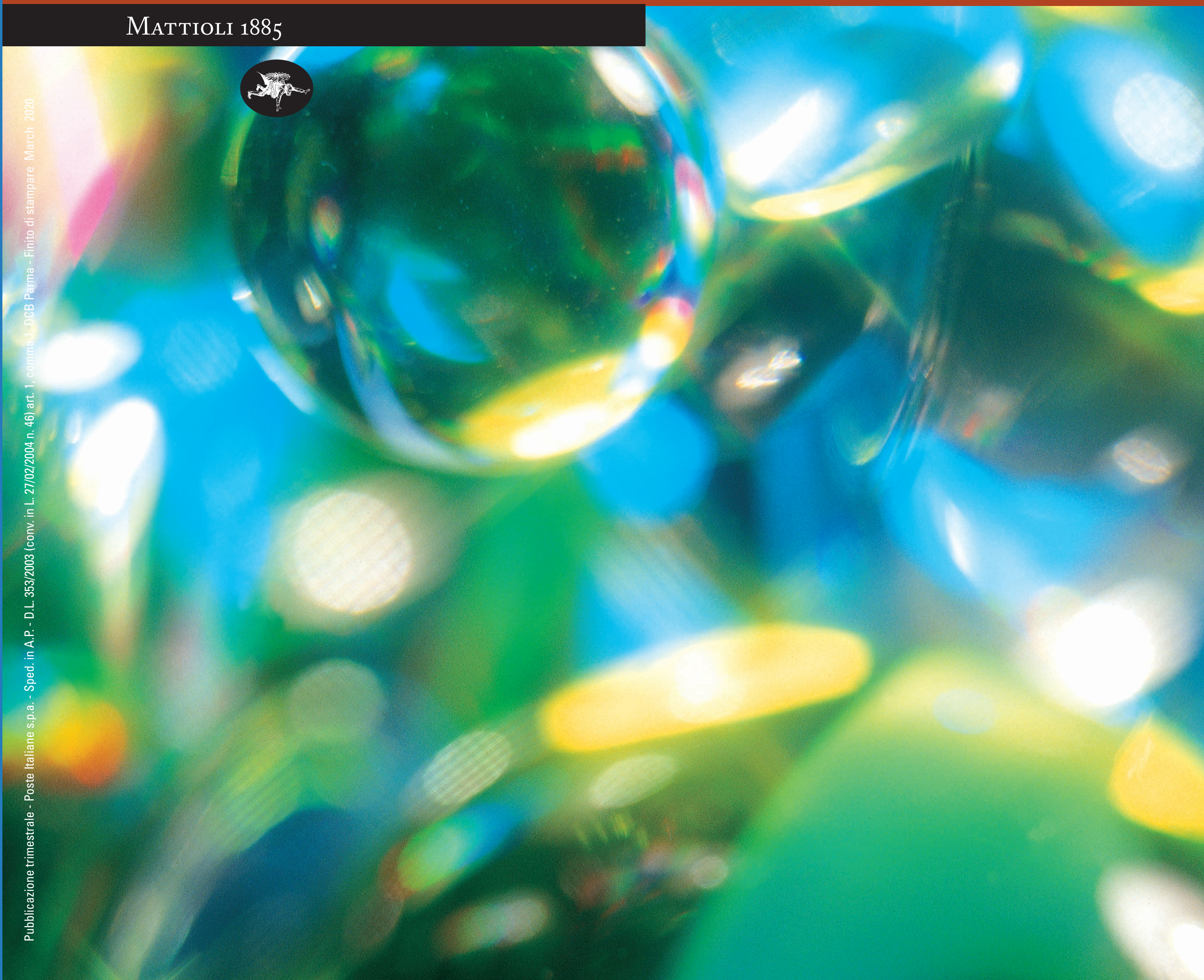

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Health Professions

Special Issue (1-2020)

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Editorial

Leopoldo Sarli[1] Giovanna Artioli[2], Chiara Cosentino[1],
[1]Department of Medicine and Surgery, University of Parma, Italy; [2]Azienda USL-IRCCS di Reggio Emilia, Italy

This issue of the ACTA supplement for Health Professionals is released to press while the healthcare professionals are providing their utmost commitment to tackle a historic health emergency that, originating in a region of China, is involving the regions of Northern Italy and gradually many other regions of Italy, Europe, and the whole world. Doctors, nurses, midwives, rehabilitators, health technicians, but also psychologists and social workers are collaborating side by side to provide due care to the patients and to slow the progress of Coronavirus CoVid 19 infection. Many researchers are engaged in the study of the characteristics of the virus, unknown to most until a few months ago, to identify possible specific therapies and to develop a vaccine useful for humans. The lack of scientific references and epidemiological certainties has determined a climate of collective panic and has severely tested the ability of political and health institutions to take adequate and shared measures. Coronavirus is the main topic of television and radio broadcasts, of the mass media in general, but also of the speeches of citizens of the concerned areas.

Our team is not far behind, in fact by writing this editorial we are commenting on what is happening and, among other things, we are considering that this unexpected event highlights the importance of some issues that this journal has been dealing with for some time.

One of them is the importance of scientific research in the specific professional areas of the healthcare. These professionals are used to considering scientific research as a prerogative of the medical profession and topics such as assistance to the person, the relationship with patients, communication with patients and family members, the importance of spirituality in medicine and many others hardly find space in prestigious scientific journals. The lack of in-depth analysis of these aspects is probably one of the reasons why the perceived quality of advanced healthcare systems is often lower than what the organizers of those systems would expect. For some time now, however, something has been changing and this magazine has been making a small contribution to this change. Healthcare professionals feel the need to apply the methods of scientific research to the deepening of those themes and the number of articles that come to the observation of this Editorial Board is increasing. Even the articles that are published in this issue represent original studies that help to highlight how research is a tool capable of allowing individual development at both personal and professional level. This also allows to change the professional environment in terms of qualitative improvement of performance and information management in a perspective increasingly based on the collection of data and evidence.

In this issue, contributions are proposed that address different topics: the validation instruments for the nursing profession (Tonarelli et al.; Strini et al.; Miraglia Ranieri et al.), studies regarding risks and potential for healthcare professionals in the relationship with their patients (d'Ettorre et al.; Marletta et al.; Provenzano et al.; Propelita et al.) and studies that propose to the public of professionals innovative integrated strategies to be used in the treatment of the patient (Artioli et al.).

The topic of this latest article concerns another theme often addressed in this journal, the inter-professionalism in caring practice. The usefulness of studies regarding this issue is highlighted by what is happening in these days. Having to face a critical, unexpected, completely new situation requires the commitment and collaboration of professionals from multiple disciplines. The implementation of different skills, all necessary, of different thought systems, of different professional skills is essential to face the different facets of a global health crisis. Skills, when necessary, have no hierarchies and cannot remain confined to individual professional areas. The crisis highlights how interdisciplinarity and multi-professionalism are an integral part of the health system and the article that we publish in this issue offers an example.

The Editorial Board in this issue intended to enhance the heterogeneity of the research groups by highlighting the contributions from educational realities (Post graduate Specializations, University), able to exemplify how the learning of the research methodology becomes, in the healthcare professional, a skill able to strengthen and expand the quality of the profession itself.

The centrality of the research and the importance of inter-professionalism also emerge from the contribution presented here on the assessment of the educational needs for Myanmar health professionals who will receive training in primary care at the University of Parma (Mosca et al.). This pilot study represents the first step of a broader analysis and an example of the concreteness of research, which is already an action, aimed at implementing a training course tailored to the educational needs that can represent the excellence for the learner.

When this issue comes out, health professionals are demonstrating the significance of their professional role, how and why their contribution is indispensable to the system. The students of the postgraduate training specializations who often publish contributions in this magazine are committed at the forefront of activities to treat people affected by CoVid 19 and to contain the epidemic. The Editorial Board of this journal feels virtually at their side and is convinced that thanks to their commitment, the next issue will come out in a serene atmosphere of returning to “normal”.

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Original article: Assessment instrument

The Patient's Narrative Agenda as an assessment tool: the story of Robert, suffering from osteosarcoma

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Abstract. *Background and aim of the work.* To activate the participation of the person in his/her care path, the literature highlights the impact of the professional's ability to show a genuine interest in the problems brought by the patient and to recognize him/her as 'competent'. In this sense the narrative patient's agenda could be a useful relational tool, because is focused on the perception of patient experiences of his/her illness. Thus this study aims to analyze the usefulness of patient's narrative agenda during the assessment phase. *Method.* A semi-structured interview has been adopted to explore the agenda of Robert, 21 years old, suffering from osteosarcoma. A first level analysis identified the four functional areas of the agenda: ideas and beliefs; expectations and desires and context in which he lives and interacts. A second level analysis assessed the main Robert's problems. *Results.* The narrative agenda has highlighted many central problems of Robert (e.g. therapeutic adherence, quality of life, mood, body image, existential problems related to experiences, hopes and expectations). Of course these results could be integrated with other tools: qualitative, to Understand difficulties and to formulate hypotheses, and quantitative, to measure the level of severity of problems reported. *Discussion and conclusion.* The narrative agenda has not only proved to be a valid instrument of assessment, allowing an adequate insight on the patient's problems, as we exemplified, but it can be also used for monitoring the dynamic situation of the person's history, lending itself to the re-exploration of its functional areas over time.

Key words: Patient's Narrative Agenda, interview, qualitative method, assessment, osteosarcoma, cancer

Introduction

Several Authors recognize that when healthcare professionals pay attention to the patient's concerns and needs, during a targeted interview, they promote the construction of the patient-healthcare professional therapeutic relationship. Conversely, a poor listening to the patient is associated to unresolved problems and can be assisted by superficial communications between the patient and the healthcare professional (1, 2).

Some studies, especially qualitative, aim to highlight the relevance of the assessment of the patient's concern through more or less structured communications interventions, which privileges the interview instead of the questionnaire for the data collection (2, 3). The conclusive considerations of some of these studies underscore the intrinsic complexity of these consultations. It also emerges that the impact of a chronic pathology is very significant for the patients, while professionals do not recognize it as such in their assessments (3).

Two different approaches to clinical consultation are still evident today: a first approach, in which the professional fixes his/her agenda and focuses on the chronic condition of the disease; a second approach, in which there is more harmony between the clinician's agenda (disease oriented) and the patient's one (disease but also illness and sickness oriented). The Authors go so far as to say that clinical consultations represented an 'alibi' for patients to reveal some of their worrying concerns (4, 5), especially concerning chronic, disabling (3) and oncological pathologies (4, 6). Listening to the person, in terms of what he/she wants to report about his/her experience of illness, reduces the risk of generating discomfort or frustration due to the absence of attention to what he/she considers important (7).

Recent literature wonders about how clinician and health professionals may stimulate and require to arouse patient's concerns and expectations, examining how the interview opens and how it closes, including the event using of pre-interview strategies or tools such as easing questions. Studies show the extent to which a patient verbalizes his/her agenda depends on the quality of the clinical interaction (8). An appropriate communication ability, capable of exploring patient's expectations, problems and emotions, is the necessary condition for activating the participation of the person in his/her care path. Concerning ways to improve participation, many studies highlight how the areas of greatest impact are thus related to the professional's ability to show a genuine interest in the problems brought by the person, to give information already adapted to his/her need and to use the patient's knowledge, so as to recognize him/her as 'competent' (9). These communication skills also require the possibility of using well-defined strategies that foster the healthcare relationship between the professional and the patient, the knowledge of his/her needs and the strengthening of the self-care attitude (10) including, for example, showing respect, creating engagement, focusing on listening to the other, generating trust and encouragement.

It therefore clearly emerges that, for the healthcare professional, it is necessary to explore in depth the patient's agenda, considered not only as a series of specific questions asked by clinics that answer short (11), but as a tool used in a narrative way, to offer the possibility for the person to express feelings, emotions, expectations, ideas and experience of illness and to reconstruct the story of illness through the empathic communication.

Also in response to this need, in the late 1980s, Levenstein and his collaborators introduced the concept of the patient's narrative agenda as the key to understand assisted people (12). The patient's narrative agenda is indeed a relationship tool of great utility in the care context, as it focuses on the subjective perception of the problem, the symptoms reported and the ways in which the patient experiences the illness, also allowing to accommodate the needs of a psycho-social matrix (e.g. being understood, accepted and supported) which the patient carries at the time of the meeting with the professional. More specifically, the patient's narrative agenda makes use of a semi-structured qualitative interview, with open questions designed to explore the following functional areas:

a) *feelings* (e.g. fear, anxiety, guilt), which concern previous events and the subjective expression of how the person suffers; b) *ideas and beliefs*: which concern the personal interpretations of the disease, articulated to generate a more complex construction of beliefs or frames; c) *expectations and desires*, related to the requests for help, more or less explicit, and the ways in which to implement it; d) *context*, which affects the working, social, family and cultural contexts, in which the patient lives and interacts, as well as concomitant events, stressors and the presence of a supportive network (14). With this structure, the patient's narrative agenda allows professionals to create an empathic but sufficiently structured setting to encourage the patient to express his/her experience through an effective relationship.

The literature recognizes from many sides the need to have more relational attention with the patient in order to provide him/her with greater spaces of verbal expression; there are also several studies in which the clinical agenda is used to stimulate the person to also express his/her point of view about signs and symptoms.

On the other hand, the literature that declines the use of the patient's narrative agenda, highlighting its advantages and limitation in the assessment phase, is scarce.

Aim

In accordance with the literature, this study aims to analyze the patient's narrative agenda during the assessment phase. Through its application in a case study, the elements making up the agenda of a single patient with its main problems, advantages and limitations that this tool can offer to the clinic have been pointed out.

Method

A qualitative analysis of the patient's illness narrative has been adopted.

Instrument

We used patient's narrative agenda by Moja e Vegni (13), integrated and adapted in a version that includes:

a) Introduction

The professional, in this phase: greets the patient, introduces him/herself and qualifies his/her professional role; makes the patient feel comfortable; collects some socio-demographic data (*e.g. How old are you? What job do you do? Who do you live with? Where do you live?*); asks the "why now" of the consultation, especially if outpatient (*e.g. What brought you here today? What is the reason for your visit?*).

b) Central phase

The professional explores the areas of the agenda that is the personal meaning of the illness and of the symptoms, and the context of the person. Here are some sample questions for each area, suggesting the professional to select the most relevant questions for that specific situation:

- the patient's feelings (e.g. *Do you want to tell us how you live this illness situation? Do you feel like telling us how you feel? What are the feelings that you recognize in yourself?*);
- the patient's ideas and beliefs (e.g. *How do you think you got sick? What did you think the first time you were sick? Do you want to tell us what idea you have concerning your illness? What do you fear most about your current illness? Do you want to tell us if there are any of your beliefs about this illness?*);
- the patient's expectations and desires (e.g. *Can you tell us what has changed since you have had these health problems? What expectations have you about your illness and its possible evolution? What could help you? What do you expect to happen? What wishes would you like to fulfil? What would you like what happened?*);
- the patient's context (e.g. *What else happened in the period in which you started to feel bad? What other problems did you face in that period? Who helps you in this situation (in terms of illness, therapy, emotional distress or other, if it emerged)? Who can you talk to about your problems? What do your family members think or say about your health problem? How did they react to your health problem?*).

c) Conclusions

Finally, the professional makes a summary of the various points and asks if the patient wants to add something and shares with him/her how to continue the process started.

Data collection and analysis

The professional initially identified the patient to administer the semi-structured interview for the extrapolation of the narrative agenda, as previously defined. Then, he asked the patient for the informed consent. In order to facilitate the application of the agenda in clinical practice, it was decided not to register and therefore deregister the interview. The professional, through paper notes, wrote down significative elements derived from the interview itself and completed these notes with richer notes described immediately at the end of the interview. The qualitative analysis adopted the framework method described by Gale and Coll. (15). In particular, two steps were taken to carry out: a first thematic analysis of the data collected to define the four areas of Robert's agenda (first level analysis); a subsequent qualitative analysis of comparison between the data to identity the main patient's problems (second level analysis), among those the needs highlighted by Artioli and coll. (16).

Context and participant

The context in which the assessment interview took place was the patient's home; Robert, 21, asked his mother to leave the room and not be interrupted or disturbed. Considering the young age of the patient, the conversation was set with an informal tone and a colloquial language. Below is a brief description of Robert's clinical case.

Robert was diagnosed with bone cancer in 2018 and, in particular, a grade 4 osteoblastic osteosarcoma of the left proximal tibia. The therapeutic indication was to start the adjuvant chemotherapy treatment. In relation to the risk of possible consequent infertility, he is also advised to preventively deposit the sperm at a specialist institution. Robert then begins cyclical chemotherapy treatments, with short hospitalizations at the specialist clinical institution.

After the first treatment, he develops a toxic liver disease, which forces him to postpone the next treatment. This was followed by urgent access to the First Aid Station for a massive bilateral epistaxis, caused by the important thrombocytopenia induced by the chemotherapy. Robert, after a few hours of observation, signs for discharge and refuses hospitalization. In early march 2019, more than a month later than the established therapeutic program, surgical resection of the left proximal tibia and the application of antibiotic-loaded cement have been performed

Results

The results are presented according to the two levels previously described: the first refers to the identification of the four functional areas of Robert's agenda; the second level analyses the data in order to assess Robert's main problems.

First level analysis: Robert's narrative agenda.

The thematic analysis leads to define the following Robert's narrative agenda:

a) Robert's feelings area

When he learned of the disease, he felt "*dazed and a little incredulous*". After the interview with his general practitioner, who explained to him the path to take and the repercussions of the therapy, initially he did not fully understand what would have happened. From Robert's point of view, the recovery of the physical form and his physical aspect before the disease appeared primary: "*You know what muscles I had! And now I have nothing left. I look white with eye bags.*" Before the surgery, the limb was deformed by tumefaction in the tibial region and painful enough to compromise normal activities such as walking, driving, simple supporting the load of the body weight in an upright position. After the surgery, an important scar remained and the limb became hypotonic. Walking and support the load of the body weight are still compromised. The change in muscle mass had thrown him into despair, so much so that he started using crutches in the hope of strengthening and redefining the muscle of his arms: "*A few months ago I saw myself as an old man!*". These limitations led him to experience feelings of anger and frustration: "*The changes in the image I have of me actually modify my mood both positively and negatively; it depends on how I am…on the chemo…and then, in reality, also the physical aspect is modified by the mood, they are two things that change a little…[…] if I am in a good mood also the physical aspect profits, if I'm in a deflected mood, the physical aspect also gets worse*".

From a phase of anger and rebellion, then he moved on to a sense of loneliness and isolation and of a lack of understanding from the people around him. He is currently going through a more conscious acceptance phase of his disease: "*I adapted myself to this situation*". "*Then, in the end, I realized that women like... RoboCop...because with all these wires and scars I look a bit like RoboCop*".

When asked if there is something that scares him, he avoided answering, but at the same time said: "*I'm not ashamed, but now I've given up going out*".

b) Robert's ideas and beliefs area

The diagnosis came at a time when life events seemed positive (house purchase, removal from his mother's partner, permanent employment). The illness was interpreted as the biggest misfortune of his life: "*Why all bad to me? What idea should I do? What idea would you make yourself? In the end, when things were starting to go well, a bigger bad luck than all came. Bad luck, fate, karma…no, not karma…bad luck above all!*".

Robert offers very personal interpretations regarding the effectiveness of medicines, underlining that he knew what was good for himself: "*Eventually, more or less everyone will develop their way of doing things; there are those who do everything that doctors say and those who act a bit in their own way*". He therefore imposed his opposition to certain drugs: "*Concerning medicines I try to take as few as possible, only in case of need or in serious cases...like growth factors, they serve no purpose and by the way I feel good; I take them when I feel sick.*"; "*I don't take growth factors because they increase negative values, that is, therefore is useless to take them since they make things not needed grow. I tried this thing myself and also other guys I talked to in the Hospital and therefore I prefer not to take them, instead I take other medicines, if necessary*".

Chemotherapy is experienced as the main problem: "*Actually I had already recovered a couple of months ago, but after I did chemotherapy cycles again, which I don't want to do anymore, I got worse again because my hair fell again and I started again being very tired of not recovering faster […]…I take a step forward the cycle pushes me two steps back, so I don't recover anymore, that's all*".

Attitudes of defiance, rebellion and the refusal to take certain therapies or to be taken a blood sample ("*I don't want holes! I look like a shitty junkie!*") seem to indicate an attempt to regain the control of his condition.

c) Robert's expectations and desires area.

It wasn't initially clear to Robert what would happen to him. As reported by him, not being very patient in nature, he expected the path to be faster. His desire was that everything would end as quickly as possible and, in the meantime, he tried to maintain a semblance of normalcy, as long as the effects of chemotherapy became too debilitating: "*At the beginning, when I started loosing my hair, I put on hats, which I never did; then when I realized I was feeling bad I stopped putting them on, I gave up*". At that point, the only desire was to isolate himself and reject personal contacts with friends. Currently, the most pressing desire is to end treatments quickly and undergo the definitive intervention, aiming to speedily recover life as before: "*I wait for treatments to finish quickly because they are really disturbing me. I want to undergo the final surgery and that's enough. I take other two-three months to recuperate 100% and then I don't want to know anymore*"; "*All of these changes have had an impact on my daily life, but then when I finish I'll recover speedily*"; "*I just have to recover, nothing else can happen to my body…Let's say I took a break…Like this summer that I was ok, when I felt good I didn't think about it at all, then, when I did the cycles that I was a little worse, I took a break, I recovered and I made some mess*", referring to the use of alcohol and drug used as palliatives. After some time, he evaluates that is useless to search for meanings and causes of the illness, because he considers them incomprehensible. It seems he's looking to the future with a certain denial of the problem: "*But, since you can't do anything about it and so going back is useless because you can't understand the reason, so let's just go on, a little unconsciously so you think less about it*".

d) Robert's context area.

Robert is of Romanian nationality and currently he lives with his mother in Italy. He is unemployed because of the disease, but he has always worked since he was 16 as an electrician and bricklayer. In the last period, before the disease, he had been permanently employed by a medium-sized company as a workman. Owning a car and independent from an economic point of view, he was helping his mother to pay the bank loan to purchase the small house where they currently live.

At present, only his mother works, even up to 15 hours a day. Robert lived in Romania until the age of 10, raised by his grandmother. Robert's mother (single parent) went in Italy to work and find a stable accommodation (income and placing) that would allow her to re-join with her son.

In Italy, she found an Italian partner, older than her, from whom they both suffered domestic abuse for the following eleven years. Only recently she decided to separate from him and move to another town with her son.

Robert has also an aunt and an uncle living in Rome, with whom he maintains regular phone contacts and whom he sometimes meets for short visits. He also has an uncle who resides in his own town but they have no relationship. He maintains frequent phone contact also with the rest of the family and friends network living in Romania. He has a conflicting relationship with his mother, due to the ease with which Robert puts himself in problematic situations (complaints, fines, fights, road accidents). He has few friends, to whom he tried to hide the disease for as far as he could. Since onset of the disease, he has maintained mostly virtual relationship on social networks.

Concerning the current context, it is clear that many things have changed in Robert's social life, starting from his staying at home, to not being able to walk as before, to the sense of constant fatigue, to the change in sleep-wake rhythm and his physical appearance: "*Indeed my physical condition influenced my social life heavily, because I don't want to go out now*";

"*I am always at home. Let's say, I'm much more there, that is, forced to stay at home. Many things have changed […]; I can no longer go out as before, I can no longer walk as before, I immediately get tired, I sleep a lot and noth-*

ing…I lose my hair. I'm sick after chemo. I don't want to go to Hospital to do chemo cycles, because afterwards I'm getting worse and worse";

"*Chemotherapy brought me mouth sores, plaques in the throat, yellow face (I look Chinese!), hair loss, leg pain, absurd tiredness…of my body I'd like to change the leg, the leg that is not good! For the rest, it's ok.*";

"*I look in the mirror even if, let's face it…what I see...I preferred before*".

The disease also had repercussions on affective and sexual life: "*The changes in relationship with friends, girls and family happened when the effects of chemo were very serious, when instead the effects were under control, the problems were not there, on the contrary I was the same as before…I've always went my own way as before*".

The impact has also an economic nature. Being on sick leave from work, he receives a minimum income: "*I still have a bit of economic independence…but it annoys me that I have no way to spend the money […], I miss the opportunity to go out and spend it because I'm closed here*".

Second level analysis: assessment of Robert's main problems

The second level analysis allowed to identify some assistance problems, which mainly refer to the psycho-socio-relational dimension. Exploring Robert's agenda, according to the needs of the assisted person (16), different care problems emerge across the various functional areas.

A central aspect, which must arise the professional's attention, is the **poor therapeutic adherence**, understood as the measure with which Robert does not take the drugs prescribed by the healthcare providers, as agreed in the treatment plan. The scarce adherence is, in Robert's case, intentional, that is characterized by a conscious decision not to assume the growth factors, in the subjective belief that drugs are potentially toxic. In addition to Robert's personal beliefs on the use of medicines, the side effects of chemotherapy, such ad hair loss and a sense of fatigue, enhance this problem.

From the different areas of the agenda it emerges that the difficulty in accepting the treatments is mainly due to the alteration of the **body image** that seems distorted by the disease and the treatments themselves. The alteration seems to be due not only to the leg surgery, but also to other factors such as pallor, alopecia, weakening of the muscles, drowsiness and the presence of signs and scars. It is evident that the current image has altered a positive self-ideal previous to the disease (as he was in terms of standards, aspirations and personal goals), self-esteem and attractiveness (in terms of opinion about one's own value), role performances (understood as socially accepted models associated with Robert's social role) and therefore, in general, his social, work and sexual identity, which led him to experience a sense of shame and a progressive social withdrawal.

Relational isolation also highlights issues related to the **mood**; Robert himself, in fact, connects changes in his body image to feeling psychologically well: mood tone influences body image and vice versa. In this case, it seems that thymic deflections are thus linked to chemotherapy and its related side effects.

We can therefore underline across the area of the agenda a poor **quality of life** connected to socio-economic and social marginality of the family (absence of the father, socio-cultural eradication, poverty) and to the health, thus properly what is meant by health-related quality of life.

The quality of life is altered both from an objective point of view, emerged above all from the context dimension (housing, health, economic, working conditions, related to social roles), and also subjective, more transversely across the areas of the agenda (in connection to the self-esteem, the satisfaction of one's aspirations and to the degree of satisfaction for one's social, emotional and working life). The quality of life, that is, seems compromised both from the physical-the subjective wellbeing (self-esteem, possibility of personal fulfilment, autonomy) point of view, and from the point of view which concerns social interactions (related to the integration into the community), both in economic, professional and social terms.

Other problems are related to these main problems, that is the alteration of **rest-sleep** (in terms of hypersomnia), of **movement** (in terms of fatigue and reduction of activities), of the **socio-cultural dimension**, concerning family and community, of the **value and spiritual dimension**, culture and ethnicity and, above all, the **dimension of experiences, hopes and expectations**.

It is in fact evident that the transition from a health to an illness condition is configured for Robert as a true traumatic shock, with consequent experiences of uncertainty and threat to his physical and psychosocial integrity. From the shock phase he went to a reaction phase, in which he became aware of the reality and began to experience strong emotional response.

On one side, he seems still anchored to this phase in which he uses different defence strategies, such as denial of shame and regression (through social withdrawal), on the other he seems to be moving toward a phase of elaboration, in which Robert begins to look to the future instead of the past, foreshadowing himself to be better soon. He seems still far from the phase of reorientation, because the meaning of the disease is still linked to an adverse fate and bad luck, and he seems still distant from living with his own disease, with the associated limitation and to accept help if necessary.

Discussion and conclusion

From the results obtained, it emerged that the patient's narrative agenda has the advantage of exploring in depth especially the psycho-social, value and spiritual problems of the person, which a qualitative assessment would not allow to grasp in a personalized way. Furthermore, from the person's experience of illness it is possible to collect the ideas and the interpretations that he, based on his history and culture, attributes to the repercussion of the disease and the treatments on his life.

The narrative agenda thus becomes an in-depth tool for analysing the central needs for the assisted person (17). In the case reported, the professional was able to analyse and better understand Robert's needs by exploring his feelings, beliefs, opinions and concerns, expectations and desires concerning the health disorder, and therefore the meaning attributed to it. The narrative agenda also made it possible to know the interferences of Robert's illness on his quality of life, his work, his family, his social relationships and on his other more personal dimensions.

Compared to the tool of the narration (18, 19), the narrative agenda is easier to use, as the questions – structured in quadrants of interest – allow the professional to benefit from a topic guide to follow in the assessment. However, it has to be kept in mind that the professional can move with some freedom in the use of questions (19). In addition, the analysis procedure needs less time compared to the interview, avoiding the registration and the deregistration of the discursive material. It therefore has a simultaneously "reassuring" structure for the professional and, which is at the same time, non-invasive for the patient, who feels guided and supported by a professional who accompanies him/her in the exploration of his/her interiority.

However, this process requires an active relationship from the professional, who must be trained in active listening and empathy (9, 10), instantly selecting the most salient contents to be pinned as a patient's answer to the stimulus questions provided. In fact, as happens during a narrative interview, the patient's narrative agenda is also based and promotes itself an emotionally genuine interaction between patient and professional, as well as the professional's acquisition of advanced listening and communication skills, reducing the use of a "professional face" (20). The tool therefore requires advanced skills and a specific training, especially in the chronic-degenerative and oncological fields (21, 22), both to use the tool itself and to analyse the data.

Another possible limitation of the patient's narrative agenda is that it mainly takes into consideration the psychosocial and socio-value aspects and does not specifically include a bio-clinical assessment.

This implies that it can be integrated with the professional's agenda (23), which examines the disease and its biophysical dimension, as well as it can be included in an integrated assessment model such as, for example, the Integrated Narrative Nursing Assessment (INNA; 24, 25). This method of assessment addresses the individual as a unit made up of a plurality of dimensions (bio-physiological, psychological, sociocultural and spiritual). For this reason, the INNA uses different qualitative methodologies, typical of the human sciences (e.g. narrative interview, patient's narrative agenda), integrating them with quantitative methods deriving from the natural sciences (e.g. scales, tests and questionnaires).

For example, in the case of Robert, the narrative agenda highlighted several problems (e.g. therapeutic adherence, quality of life, mood, body image, existential problems related to experiences, hopes and expectations) that could be analysed with other tools, both qualitative, to deepen the understanding of some difficulties that seem central to the person and to formulate hypotheses that can occur with a further narrative interview, and quantitative, such as scales, to measure the level of severity of a disorder/problem reported.

Despite the possible limitation mentioned, the narrative agenda has not only proved to be a valid instrument of assessment, allowing an adequate insight on the patient's psychosocial problems, as we exemplified in the case reported, but it can also be a useful tool for monitoring the dynamic situation of the person's history, lending itself to the re-exploration of its functional areas over time.

To conclude, the patient's narrative agenda, in the social-health field, seems to have an important clinical and assistance value, allowing the professional to trace the assisted patient's psycho-social and value-spiritual problems, thanks to its transversal, simplicity and immediacy of use.

Soliciting the patient's agenda takes a little time and can improve interview and yield increased data (26). It therefore helps to direct the practice of healthcare professionals towards a real holistic and deeply person-centred approach (5).

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Original article: Assessment instrument

Assessment of depression symptoms in female cancer patients: focus on concurrent validity

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Abstract. *Background and aim of the work*: The present research explores Concurrent Validity of two depression measures the Beck Depression Inventory (BDI) and the Depression Subscale of the Hospital Anxiety and Depression Scale (HADS- Depression subscale) in specific oncological groups (female cancer and onco-hematological patients). *Method:* A correlational study was designed and took place at Careggi Universitary Hospital in Florence, including 339 oncological patients, in particular 103 (59 Women and 44 men) patients suffering from lymphoma, and 236 patients suffering from female cancer. We estimated, by Pearson's r, Concurrent Validity between BDI and HADS depression's subscale. *Results*: Correlations failed to reach the 0.55 cut-off in the female cancer group (r=.34, p<.001) but not in the onco-hematological patients (r= 0.56, p<.001). *Conclusion:* The results stressing the need to develop and validate assessing tools that are specifically devoted to different groups of oncological patients. (www.actabiomedica.it)

Key words: depression, concurrent validity, female cancer, hospital anxiety depression scale, beck depression inventory

Introduction

In cancer patients prevalence of depression is higher than in the general population (1), with higher levels of depression in female patients (2). Nevertheless, depression in oncological patients seems to be underdiagnosed and consequently undertreated (3). The instruments more used to evaluate depressive symptoms in literature are The Beck Depression Inventory [BDI] (4), and the Depression subscale of The Hospital Anxiety Depression Scale [HADS-Depression] (5). BDI is a 21-item self-report questionnaire assessing the depressive symptoms perceived by the patient in the affective, cognitive, motivational, vegetative, and psychomotor domains. The HADS is a 14-item self-report questionnaire on a 4-point Likert scale, and includes depression (7 items) and anxiety (7 items) subscales. HADS can assess the severity symptom of anxiety disorders and depression in somatic, psychiatric and primary care patients. In literature, the adequacy of available depression scales has been questioned for specific oncological groups. Female cancer patients (6) and onco-hematological patients (7) could present peculiar psychological features when compared with other groups. A study on female cancer group (6) points out to consider level of Depression, level of Anxiety and level of Body Image Disturbance with regard for young women. Gomez-Campelo et al (6) suggest that these psychological dimensions are probably connected with the effects of cancer treatment as: loss of fertility, menopause symptom and sexual functioning. Bergerot et al. (7) discussed that female cancer group reported more distress, anxiety and depression than male patients. Studies above considered (6, 7) addressed for a tailored assessment an intervention for different groups. On one hand, there are studies on peculiar need for different oncological group but on the other hand to our Knowledge in literature there aren't studies about concurrent validity for depression instruments in different cancer group. The present empirical study aims therefore to assess concurrent validity of the two most widely used depression tools (HADS-Depression subscale and BDI) in specific oncological groups (female cancer and hematological tumor) according to the guidelines of European Federation Psychological Association [EFPA] (8) in correlation studies, setting a cut-off of Pearson's *r*>0.55 for Concurrent Validity.

Method

A correlational study was designed and took place at Careggi University Hospital in Florence from September 2011 to September 2013. Hospitalized and Day Hospital patients took part in the study; the following exclusion criteria were adopted: a) age <18 and >75 years, b) intellectual disability, c) not fluent in Italian. The study enrolled a convenience sample of 339 consecutive patients (mean age 55 ± 13); in particular 103 (59 women and 44 men) patients were suffering from lymphoma, 236 patients were suffering from female cancer. The mean age was 55.5 ± 13.1 years.

BDI and HADS (4; 9) were administered within a test battery that was designed for different purposes, which was completed in an average time of 50 minutes. To deepen complete battery of tools and criteria of selection of the cases oncological groups and of the control group (10). Pearson's *r* coefficient between BDI and HADS was separately estimated in the female cancer and onco-hematological groups to assess concurrent validity.

Ethical consideration

The study was approved by the local Ethical Committee with acceptance protocol number 2010/0008185 Ref. 19/10 and 2011/0027621 Ref. 70/11. Written informed consent was obtained from all the participants prior to enrolment.

Results

Table 1 summarizes the descriptive of the groups (total oncological patients, n= 339; onco-hematological patients, n=103; female cancer group, n= 236). We compare also the value of *r*, considering criteria cut-off of r >.55 of EFPA for concurrent validity.

In the female cancer group Pearson's *r* (r=.34, p<.001) the result was largely under the reliability cut-off of EFPA defined by comparing HADS-Depression with BDI. So, in this female cancer group the comparison failed to reach the criterium on the contrary Concurrent Validity of HADS-Depression compared with BDI was verified and satisfied in the onco-hematological group (*r*= 0.56, p<.001). Comparing HADS-Depression subscales with BDI failed to reach the criterium (*r*>0.55), for Concurrent Validity

Table 1. Descriptive Statistics and Mean value for Depression Scale HADS and Beck Depression Inventory BDI

	Total Oncological Group N=339	**Female Oncological Group N= 236**	**Haematologic Oncological Group N= 103**
	M ± DS	**M ± DS**	**M ± DS**
Hospital Anxiety Depression Scale-Subscale of Depression	7.57 ± 3.21	7.60 ± 3.23	7.52 ± 3.17
Beck Depression Inventory BDI	6.83 ± 7.06	6.58 ±6.76	7.41±7.72

also in the total sample as well (r=0.42, p<.001). Despite the three comparisons are statistically significant the power of r seems to be satisfied just for onco-hematological group.

Conclusion

The present study explored Concurrent Validity of a widely used scale to assess depression in specific populations of oncological patients (female cancer patients and onco-hematological patients) which are known to have peculiar psychological needs (6, 7). HADS-Depression and BDI largely failed to reach the EFPA validity criterium in the female cancer group as well as in the total sample, therefore suggesting that common empirical procedures devoted to evaluate depression symptomatology in oncological setting should be carefully reconsidered. The clinical implications of the results suggest that the choice of the best psychological instruments for specific cancer groups should be considered as a relevant pre-condition in order to identify cancer patients at high risk of psychological maladjustment, and in designing tailored interventions aiming to address depressive suffering in this population. More in general, the results stress the relevance of an accurate assessment of psychosocial factors in oncology. The development and validation of assessing tools that are specifically devoted to the different needs of different groups of oncological patients (for example in young female cancer group as: loss of fertility, menopause symptom) should be considered as a primary goal for future research.

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

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Original article: Assessment instrument

Barthel Index: creation and validation of two cut-offs using the BRASS Index

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Abstract. *Background and aim:* Hospital discharge should be planned during the first days of stay to avoid an inappropriate length of stay and an early rehospitalization. Blaylock Risk Assessment Screening Score Index (BRASS index) evaluates the risk of difficult discharge, Barthel Index the level of autonomy in "activities of daily living" (ADL). This is a prospective observational study, performed in Padua's Hospital (Italy), with the purpose of validating two cut-offs in the Barthel Index using the BRASS Index, in order to find three bands for difficult discharges: low, medium and high risk. *Methods:* Two studies have been conducted: a pilot study in 2017 with 153 patients and a validation study in 2018 with 253 patients, in order to validate data emerged from the pilot study. Using a statistical method, two cut-offs have been identified in the Barthel Index. *Results:* Both of study showed that the grade of autonomy is correlated with the risk of difficult discharge. A Barthel score between 0 and 35 corresponds to a high risk, between 35 and 70 to a medium and over 75 to a low. *Discussion:* This study suggests that, by the use of only Barthel Index, it may be possible to identify patients who may have difficulty in early discharge. This result suggests that the degree of functional dependence is predictive of the risk of difficult discharge. Further studies are needed to confirm the correlation between these data also in other realities (e.g. outside hospital departments). *Conclusion:* Nurses could use a single instrument to evaluate the autonomy and the risk of difficult discharge in order to identify early patients that need a discharge plan. (www.actabiomedica.it)

Key words: Barthel, BRASS, nurse, difficult discharge, cut-off

1. Introduction

A difficult discharge occurs when, in accordance with the continuity of care and treatment, it requires greater economic, organizational and human resources, which go beyond the capabilities of the assisted people and their families (1). The discharge is always a critical moment for the patient. The responsibility for discharge is shared between the doctor and the nurse. In fact it is not only the clinical condition that defines when a patient can be discharged, but also health professionals must ensure that the patients feels ready to return home and that a good assistance can be guaranteed by the caregivers, through the ability to manage the situation at home in the most autonomous way possible and to provide them the appropriate care (2).

Scheduled discharge may reduce hospitalization days and cases of rehospitalization in the first three months after discharge, and may also increase the patient's satisfaction and trust in healthcare professionals (3).

The discharge should be planned for patients who have complex medical needs to ensure safety and continuity in the care process, even after returning home, through the taking in charge and collaboration of several professionals. The resignation planning process should start as soon as possible, especially in older patients, who are most at risk of having difficulties at this stage (2).

The Blaylock and Cason Index (Blaylock Risk Assessment Screening Score Index - BRASS Index) could be used to identify patients at high risk of difficult discharge. This scale was developed in 1992 by Blaylock and Cason as an instrument to help the healthcare personnel in planning discharge for patients over the age of 65. According to their experience in geriatric nursing, they considered the following factors as most predictive of a difficult discharge: age, gender, living situation/social support, functional status, cognition, behavior pattern, mobility, sensory deficits, number of previous admission/emergency room visits, number of active medical problems, number of drugs.

The score identifies three classes of risk: low (pts <10), medium (pts 10-19), high (pts >20).

The evaluation should be executed by a nurse in the early days of hospitalization to identify patients that need the activation of territorial network and to avoid an inappropriate length of hospital stay precociously (4). It is simple and quick (for compilation only about 3 minutes is necessary) (5).

A study developed in 1999 demonstrates that the BRASS Index correlates significantly with problems experienced after discharge and that it has high specificity to predict patients with problems after discharge(6).

The efficacy of the BRASS Index has been validated also in a sample of patients in Cunic et al.'s study. It's been useful to identify patients with a BRASS Index > 8 that are likely to stay in hospital five or more days and should receive pre-emptive social work consultations to facilitate discharge planning (7).

A prospective study, conducted in 2013 in six different Italian hospitals, validated the BRASS Index as a useful instrument to identify patients at risk of prolonged hospitalization (5).

The Barthel Index is an instrument, created in 1955 by Dorothea W. Barthel that, as the BRASS Index, evaluates the functional status and the level of autonomy in daily-life activities such as: feeding, bathing, grooming, dressing, bowels-control, bladder-control, toilet use, transfers (bed to chair), mobility (on level surfaces), and stairs. A score of 100 represents the upper level of autonomy and 0 the totally dependence on someone. The process of filling the papers in requires just few minutes and the information can be taken through a short interview with the patient or his caregiver.

The validity of the Barthel score has been described by several studies, also in correlation with mortality, in particular in the rehabilitation setting and in patients affected by ictus (8).

A recent research confirms this instrument as a valid scale to evaluate the level of autonomy of patients with previous ictus (9).

The usefulness of this study is to find out if, through the compilation of a single instrument, in this case the Barthel Index, is possible to identify more information avoiding the compilation of two or more scales. Barthel Index provides a judgment, through a score, of the patient's ability to cope with activities of daily life. Brass index, instead, gives a judgment of the risk of difficult discharge. If we could identify, with the use of Barthel Index, the degree of risk of difficult discharge, correlating this score with the BRASS Index, we will be able to check with a single score both information, difficulties in ADL and risk of difficult discharge.

It is expected that staff will engage in the use of this instrument, simple and fast, optimizing the information already held and avoiding the administration of more scales.

2. Aim

The purpose of the research is validating two cut-offs in the Barthel index, a continuous scale, correlating it with the BRASS Index, a three bands scale, in order to find three bands for difficult discharges: low, medium and high risk.

The correlation between the two scales helps to suggest if it is possible to use the Barthel Index also to identify the risk of difficult discharge, studied by BRASS Index.

The identification of two cut-offs confirms the overlap of the data between the two scales and the possibility of using, through a band-scale, a data easily and immediately expendable at a care level.

3. Methods

Study design

This is a prospective observational study, performed in Padua's Hospital (Italy).

The study has been divided into two parts:

- a pilot study, conducted on a convenience sample of patients in 2017, with the aim to identify a correlation between Barthel and BRASS Index;
- a study of validation, conducted on a predefined sample of patients, which validated data emerged in the first part of the study and identified the two cut-offs.

3.1 Pilot study

The Barthel Index has been divided in 4 different levels of score using a division that is not validated (100-91: completely independence, 90-61: slight level of dependence, 60-21: moderate, >20 severe) conventionally decided in the Veneto Region, in order to evaluate the grade of autonomy of patients.

In this first step, 153 patients have been included, 80 males and 73 females, recovered in two different medical divisions. Data have been collected for four weeks in August 2017.

Each patient has been evaluated using both, BRASS and Barthel Index, through an interview or by observing their functional abilities at the moment of admission. If the patient cannot answer, a caregiver or a member of clinical staff was consulted.

Both scales were administered by the same nurse per patient.

3.1.1 Eligibility criteria:

Patients >18 years old, who were accepted to participate to the study and who were evaluated with both scales.

3.1.2 Exclusion criteria:

Patients who could not be evaluated with both scales at the admission, unable to communicate or without a caregiver that was able to help them with communication.

This is an observational study that didn't influence the clinical practice in any way. The consent at the treatment of sensible data was orally collected maintaining the guaranty of anonymity.

3.2 Study of validation

It was estimated to enroll a sample size of 240 patients, divided in the three bands of BRASS Index. The sample size of 80 patients, for single band, was calculated assuming a type I error of 0,05 and a type II error of 0,20.

253 patients were included in the study, considering a potential withdrawing rate of 5% from the study: 134 male and 119 female, hospitalized in the same medical divisions of the pilot study.

Data collection started on July 2018 till the end of August, after reaching the required sampling number. The belonging of one of the three risk categories has been identified through the BRASS Index.

Eligibility and exclusion criteria were the same of the pilot study.

Barthel and BRASS Index were administered to each patient at the moment of admission in the unit, from 23 July 2018 to 27 August 2018. Age and gender were also detected to evaluate the presence of any relationship risk between age or gender and risk of difficult discharge.

This phase of the study did not influence the routine clinical practice. Also at this stage the consent was collected in oral form by patients or their caregiver, maintaining the guarantee of anonymity.

3.3 Statistical analysis

The data were analyzed with Excel (Office Premium 2003, Microsoft Corporation, Redmond, WA, USA). Descriptive statistics were used to provide summaries of the characteristics about the study population.

The analysis of the data required multiple tests; a p-value of <0.001 was considered statistically significant.

Computations have been performed in R 3.5 with ThresholdROC package. An ordinal regression model was fitted to assess the impact of age and sex on Barthel Index classes. The relationship between age and Barthel Index classes was modeled with a restricted cubic spline with 3 knots to allow a non-linear effect. Anova test was used to test both the significant impact of age and sex and the linearity of relationship between sex and Barthel Index classes.

4. Results

4.1 Pilot study

The sample of the pilot study is represented by 153 subjects, 70 males and 83 females.

The Graphic 1 shows as a high score in the Barthel scale is correlated with a low risk of difficult discharge.

According to the division of the Barthel Index, all the patients with a Barthel score between 100 and 91 belong to the low risk of difficult discharge of the BRASS Index.

Subjects with a Barthel Index between 90 and 61 are collocated 66% in the low risk and 33% in the medium risk.

The 65% of patients with Barthel Index between 60 and 21 are collocated in the medium level, 12% in the high level and 23% in the low level.

23% of subjects with an elevate grade of dependence (Barthel <21) belong to the medium risk and 67% to the high risk.

These data are reported in Table 1.

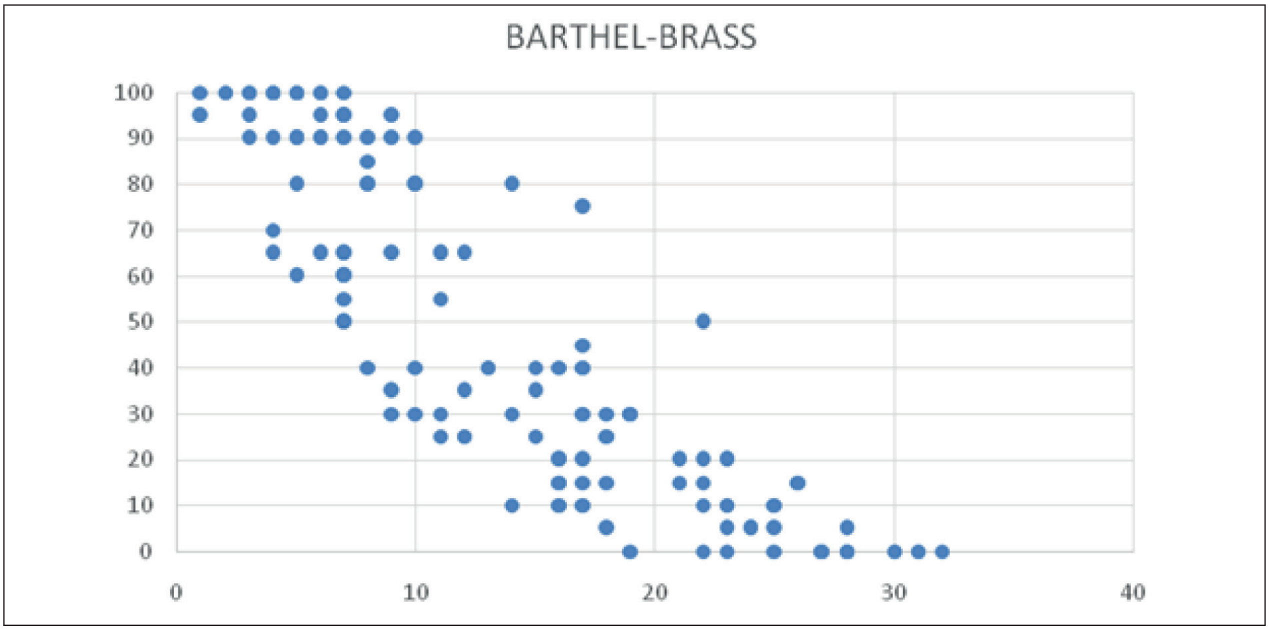
From the distribution of the data of the pilot study, a correlation was observed between the degree of functional dependence and the risk of difficult discharge, so that a decrease in the level of autonomy is associated with an increase in the latter.

The study of validation aims to confirm the hypothesis emerged in the first study through a targeted collection of data on a generic sample.

4.2 Study of validation

In this step 253 patients participated in the study: 118 females and 135 males. 82 patients belong to the low risk class (39 females and 43 males), with a middle age of 63 years; 83 patients belong to the medium risk class (39 females and 44 males), with a middle age of 79 years; 88 patients belong to the high-risk class (40 females and 48 males), with a middle age of 82 years.

A sample size estimation has been performed on an optimal cut off definition problem(10). Three normal distributed populations have been assumed for a patient with low, medium and high-risk BRASS In-



Graphic 1. Correlation between Barthel and BRASS Index

Table 1. Correlation between BRASS and Barthel Index

		Brass score			
		Low risk	**Medium risk**	**High risk**	**Total**
Barthel Index	**100-91**	27 (100%)	0	0	**27**
	90-61	19 (66%)	8 (33%)	0	**27**
	60-21	12 (23%)	33 (65%)	6 (12%)	**51**
	20-0	0	11 (23%)	36 (67%)	**47**

dex. In Table 2 distribution of variables across classes of BRASS Index are reported. Continuous variables are reported as median (I and III quartile), whereas categorical variables are reported as frequencies (percentages). From the table we deduce that the median age increases with the increase of the risk band (Table 2).

In table 3 cut offs on Barthel Index computed given BRASS classes are reported. Moreover, 95% Bootstrap Confidence Intervals (computed with 1000 bootstrap replicates) are reported. Computations have been performed in R 3.5 with Threshold ROC package.

The first cut off identified on the Barthel Index is 27.7; the second cut off identified is 71.3.

The approximation to 35 and 70 of the two cut offs were chosen.

The three risk bands identified as such are shown to be, high risk of difficult discharge for Barthel Index from 0 to 30; medium risk for Barthel Index from 35 to 70; low risk of difficult discharge for Barthel Index from 75 to 100 (Table 3).

Table 4 reports the distributions of variables across Barthel Index classes given the estimated thresholds. Continuous variables are reported as median (I and III quartile), whereas categorical variables are reported as frequencies (percentages). Also here, as the risk increases, there is an increase of patients' age (Table 4).

An ordinal regression model was fitted to assess the impact of age and sex on Barthel Index classes (Table 5). The purpose is to check if differences on Barthel Index in classes were present for subjects with higher ages or between males and females. The relationship between age and Barthel Index classes was modeled with a restricted cubic spline with 3 knots to allow for non-linear effect. Anova test was used to test both the significant impact of age and sex and the linearity of relationship between sex and Barthel Index classes.

Age has a significant effect on Barthel Index (p-value <0.001) and the effect is supposed to be non-linear (p-value = 0.041). Gender doesn't show any significant effect on Barthel Index (p-value = 0.630). Age and gender do not significantly interact in defining Barthel Index (p-value = 0.421.) (Table 5).

Table 3. Thresholds

Thresholds	**Lower_95_CI**	**Upper_95_CI**
27.66748	24.10016	30.63333
71.33588	68.23614	75.25900

Table 2. Descriptive statistics for variables across Brass score classes

	Level	**Low_risk**	**Medium_risk**	**High_risk**
Number		82	83	88
Gender (%)	F	39 (48.1)	39 (47.0)	41 (46.0)
	M	43 (51.9)	44 (53.0)	47 (54.0)
Age_years (median [IQR])		67.00 [52.00, 78.00]	81.00 [75.50, 86.50]	83.00 [79.00, 88.50]
Barthel_0_100 (median [IQR])		95.00 [85.00, 100.00]	50.00 [35.00, 65.00]	5.00 [0.00, 15.00]

Table 4. Distribution of variables across Barthel score classes given the estimated thresholds

	Level	Low_risk	Medium_risk	High_risk	p	test
Number		80	80	91		
Gender (%)	F	36 (45.0)	37 (46.2)	45 (49.5)	0.833	
	M	44 (55.0)	43 (53.8)	46 (50.5)		
Age_years (median [IQR])		68.50 [52.75, 80.00]	80.00 [72.75, 85.00]	84.00 [79.00, 88.50]	<0.001	nonnorm
Brass_0_10 (median [IQR])		6.00 [2.00, 9.00]	15.00 [12.00, 18.00]	24.00 [22.00, 26.00]	<0.001	nonnorm
Barthel_0_100 (median [IQR])		95.00 [88.75, 100.00]	50.00 [40.00, 65.00]	5.00 [0.00, 15.00]	<0.001	nonnorm

Table 5. Anova table to test the impact of age and sex on Barthel score classes

Term	Chi-square	Degrees of freedom	P-value
Gender	1.729	3	0.630
Age	27.213	4	0.000
Age (non-linear)	6.377	2	0.041
Gender X Age	1.729	2	0.421
Gender X Age (non-linear)	1.551	1	0.213
Non-linear Total	6.377	2	0.041
Non-linear total + interactions	7.662	3	0.054
Total	27.410	5	0.000

In Figure 1 the higher the age of the patients, the higher the risk of being in the higher risk class of the Barthel Index (Figure 1).

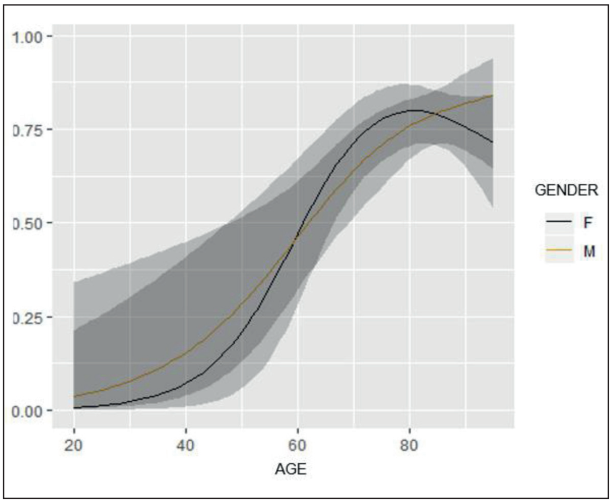


Figure 1. Effect of age by sex on Barthel score classes

Table 6. Odds-Ratio of age

Gender	Age	OR (95% CI)
Male	60 – 80	3.64 (1.94 - 6.83)
Female	60 – 80	4.46 (1.8 - 11.04)

Even from age odds ratios it is clear that being over 60 is a risk factor for incurring a difficult discharge (Table 6).

5. Discussion

The use of Barthel allows a greater compliance by the health worker as it instantly assesses the situation while for the BRASS Index it is often necessary to interview a caregiver to find information regarding the therapy in progress and previous admissions in hospital.

Both scales are easy and quick to complete (5), as they are shown by administering them at the time of patient entry. Using only one of the two scales would allow an equally effective and faster evaluation.

The analysis of the results of the pilot study conducted on a convenience sample shows that there is a correlation between the level of dependence assessed by the Barthel scale and the risk of difficult discharge. The two scales are overlapped as regards the extreme values: no subject with a Barthel score higher than 60 was presumed to be at high risk of difficult discharge and no subject completely dependent was placed in the low risk of difficult discharge. The results that differed were the fewest number of cases (13%): in most cases the level of dependence was related to the risk of difficult discharge (87%).

These results suggest that the Barthel scale is predictive of the risk of difficult discharge.

From the analysis of the results of the validation study it has emerged that age is a parameter that directly affects the risk of difficult discharge: the higher the age, the higher the probability of belonging to the high risk class. It is therefore necessary to have further consideration for older patients, even if they are self-sufficient, so that the risk is not underestimated. As far as sex is concerned, it does not appear to be any relationship of dependence with the risk of difficult discharge: it can therefore be said that being a man or a woman is not a relevant parameter.

The cut-offs obtained through the use of the BRASS Index correspond to the Barthel scores of 30 and 70: these cut-offs want to add a further information to the evaluation of autonomy in ADL. Through the use of the Barthel Index alone, it may be possible to identify patients who may have difficulty in early discharge. This result suggests the degree of functional dependence, although not the only predictive factor analyzed by the BRASS Index is predictive of the risk of difficult discharge. The data emerging from this study agree with other literature studies according to which a condition of fragility, in which age and the level of autonomy are decisive, is commonly associated with a substantial increased risk of early readmission (within 30 days) or death, after discharge from medical departments (2, 11).

6. Conclusion

The use of a single scale, which evaluates both the level of functional dependence and the risk of difficult discharge, reduces the time and workload of nurses. Nurses find themselves favored in the evaluation of two information with the use of a single instrument.

A single evaluation can be useful for an early screening of subjects at risk, but, if a risk condition emerges, it will still be necessary to carry out a targeted assessment to assess the actual need for a protected discharge.

The study has some limitations. It involved patients admitted exclusively in medical departments, not considering, for example, surgical patients. The age of the patient to fit the BRASS Index should be more than 65 years, while for Barthel it is not specified, but in this study all patients over the age of 18 were involved. The assessments were carried out by personnel with different training on the administration of the Barthel and BRASS Index. It has not been evaluated how much the BRASS parameters individually affect the risk of difficult discharge.

The study has as well some remarkable strenghts. The subjects of the study were homogeneous, with similar medical problems. The sample size for the study was defined a priori and was homogeneous for the three risk classes identified by the BRASS Index.

It is necessary to carry out another study with a larger sample to confirm the findings. It may be useful to repeat the same study in a surgical reality where functional autonomy varies rapidly before the hospitalization, during hospitalization, and at the time of discharge.

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

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Original article: The opinions and needs of health professions

Self-efficacy in breastfeeding support: a research on Italian midwifery students

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Abstract. *Background and aim of the study:* Maternal breastmilk represents the best nourishment for the newborn baby during its first six months, as it offers several benefits for the health and well-being of babies and mothers. In order to promote, protect and support effectively mother and child during breastfeeding, it is essential for midwives to be properly educated and to acquire highly professionalizing skills. This study aimed to evaluate the level of self-efficacy of the students attending the Degree Course of Midwifery, regarding the support of mother and child in breastfeeding. *Method:* A questionnaire of 37 items (Blackmanet al, 2015) validated in Italian by Mazzeo Melchionda (2019), was sent on-line to students of ten different Midwifery Degree Courses to assess their level of self-efficacy regarding the management of breastfeeding. Statistical analysis was carried out using statistic software R3.4.3 (The Foundation for Statistical Computing). *Results:* 158 questionnaires were collected from ten Italian Midwifery Degree Courses. The areas in which students showed a high level of self-efficacy in managing breastfeeding include: the benefits of breastfeeding; the child's tendency to take the breast within an hour from childbirth and the relevance of skin to skin contact and rooming-in. Low levels of self-efficacy concerned the comfortably breastfeeding in public places and avoiding giving formula to the baby in its first six weeks of life. *Conclusions:* Generally the students attending Midwifery Degree Courses show a high level of self-efficacy in assisting mothers during breastfeeding and they prove to have a good knowledge of the benefits of breastfeeding to improve the health of mothers and their children. (www.actabiomedica.it)

Key words: breastfeeding, newborn, mother, skills, self-efficacy, midwifery students

Introduction

Maternal breastmilk represents the best nourishment for newborn babies in their first six months, guaranteeing the prevention of diseases in the perinatal age and a proper growth (1). In order to begin and maintain breastfeeding with a good outcome, during pregnancy and after childbirth, mothers should be actively supported not only by their families, but also by the healthcare system (2-3). The staff that works in healthcare facilities should try to protect, promote and endorse breastfeeding and should provide consultation on the matter to pregnant women and new mothers (4). UNICEF and WHO recognize a "Children Friendly Hospital" as a healthcare facility that has successfully undergone a transformation regarding the assistance given to mothers and their children in the Maternity Ward, practicing the Ten Steps method (5).

Among healthcare professionals, the midwife has high competencies in early mother-child bonding, in promoting and sustaining breastfeeding, in spreading the notion of willingly donating breastmilk and in joining the international Code for the sale of maternal breastmilk substitutes (6-7).

It therefore becomes fundamental for future midwives to acquire a proper education in order to broaden their knowledge and their skills (8-10) and to promote, protect and support mother and child during breastfeeding.

Several international studies show that a lack of help for mother and child, disagreeing opinions and an inappropriate education of staff can seriously affect breastfeeding results (11-12). For instance, a survey of breastfeeding knowledge of 3500 midwives held by the Australian College of Midwives Inc. (ACMI) estimates that the education program provided by the hospital and by Universities is an essential source of information on breastfeeding and that ongoing education programs are still necessary (13-15).

The University of Brisbane, Australia, took the Breastfeeding Knowledge Questionnaire (BKQ), the Newborn Feeding Ability (NFA) and the scale and the Breastfeeding Initiation Practices scale (BIP) to test the knowledge and practical abilities of breastfeeding of Australian nurses and midwives in order to improve long-term evidence-based practice (16).

A qualitative study at York University (UK) shows that breastfeeding is getting more and more recognition as a priority health policy. Health professionals who advise and support women on breastfeeding must be adequately educated so that mothers do not interrupt breastfeeding prematurely (17).

A study led by the School of Nursing, Southern Illinois University, shows that Degree Courses do not provide a complete education on breastfeeding for students, but they can influence positively the mother's duration of breastfeeding (18).

The Health Institute of Catalonia, Spain, conducted another study in 33 primary assistance centers, in order to evaluate the basic level of knowledge on breastfeeding among primary care professionals who are involved in giving support to new mothers using a CAPA (Compe-tència en l'Atenció Primària sobre Alletament) survey. This could help in identifying groups of professionals with lower skills on breastfeeding who may mostly benefit from interventions to improve their abilities in boosting and managing breastfeeding (19).

Both a Swedish (20) and an Israeli (21) studies examined the opinions of Nursery students on the benefits of breastfeeding, and they confirmed the importance of promoting it in future Nursery education programs. The study led by the College School of Nursing Chicago-Malcolm, Illinois, and the University of Pennsylvania, Philadelphia, assessed that students are not properly prepared to aid breastfeeding women, so they developed a kit full of educative

Table 1. Ten steps to successful breastfeeding

1. Have a written infant feeding policy that is routinely communicated to staff and parents.
2. Ensure that staff has sufficient knowledge, competence and skills to support breastfeeding.
3. Discuss the importance and management of breastfeeding with pregnant women and their families.
4. Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.
5. Support mothers to initiate and maintain breastfeeding and manage common difficulties.
6. Do not provide breastfed newborns any food or fluids other than breast milk, unless medically indicated.
7. Enable mothers and their infants to remain together and to practice rooming-in 24 hours a day.
8. Support mothers to recognize and respond to their infants' cues for feeding.
9. Counsel mothers on the use and risks of feeding bottles, teats and pacifiers.
10. Coordinate discharge so that parents and their infants have timely access to ongoing support and care.

evidence-based material on the topic, in order to supply future nurses with the necessary skills to support effective breastfeeding (22).

A systematic review highlighted that in order to promote and support breastfeeding an accurate education and adequate structures are fundamental for midwives and doctors (23).

A revision of 14 studies conducted by the School of Nursing and Midwifery at Western Sydney University states that it is essential to offer Nursery and Midwifery students educative strategies including academic lectures, simulations, evidence-based conferences with clinic cases, in order to increase their confidence in helping and guiding breastfeeding mothers and to guarantee future healthcare professionals who are well prepared to support breastfeeding (24).

Aim

This study aims to evaluate the knowledge and the level of self-efficacy of Italian Midwifery students in managing, advising and supporting the new mothers in order to point out possible difficulties that can affect their acquisition of basic skills towards breastfeeding.

Methods

Study Design

The study has descriptive purpose and uses a quantitative design.

Instrument

An on-line questionnaire (37 item) was chosen. The instrument was designed by Blackman et al. (25) and was validated in Italian by Mazzeo Melchionda et al. (26). It measures the perception of students of the Midwifery Course of Degree regarding their level of self-efficacy in helping breastfeeding mothers. The questions were measured with a Likert scale (1= it is really easy for me to do; 2= it is easy for me to do; 3= it is difficult for me to do; 4= it is really difficult for me to do).

Table 2 shows the item of the questionnaire.

Participants

Through a convenience sampling, participants were selected from ten Midwifery Degree Courses in different Italian Universities: University of Rome La Sapienza, University of Ferrara, University of Modena and Reggio Emilia, University of Monza, University of Milano, University of Parma, University of Brescia, University of Bologna, University of Trieste, University of Pavia.

All the participants attending the third year and they accomplished a stage of at least 100 hours in the Maternity Ward.

Data analysis

For each of the 37 items we calculated mean, median, standard deviation values and percentage of answers equal to 3 (It's difficult for me to do it) or 4 (It's very difficult for me to do it).

The mean score values were assessed in order to highlight the areas where students reported the greatest and the lowest self-efficacy. If present, missing values were excluded from the analysis and only valid responses were considered. All statistical analyses were carried out using R 3.4.3 statistical software (The R Foundation for Statistical Computing, Wien)

Results

158 questionnaires were collected. Of these, 131 (82.9%) did not have any missing value in all the 37 items of the questionnaire. 29 questionnaires were gathered at the University of Rome – La Sapienza, 28 (100% of the students attending the third year) at the University of Ferrara, 23 (100% of the student attending the third year) at the University of Modena and Reggio Emilia, 15 (85% of the students attending the third year) at the University of Parma, 13 (80% of students attending the third year) at the University of Milan (Monza Hospital), 13 (80% of the students attending the third year) at the University of Brescia, 11 (59% of the students attending the third year) at

Table 2. The questionnaire

Item	To answer the questions: 1 = very easy, 2 easy, 3 difficult, 4 very difficult.
1	Hold her baby comfortably during breastfeeding
2	Position her baby correctly at her breast
3	Focus on getting through one feed at a time
4	Recognise the signs of good attachment
5	Take her baby off the breast without pain to the nipple
6	Determine if the baby is getting enough milk
7	Gain her family's support in her decision to breastfeed
8	Motivate her to breastfeed successfully
9	Breastfeed her baby without using formula as a supplement
10	Ensure that her baby is properly attached for the whole feed
11	Manage her crying baby who wants to breastfeed
12	Keep her baby awake during feeding
13	Maintain her milk supply by using demand feeding
14	Not to bottle-feed for the first 6 weeks
15	Feed her baby only breast milk
16	Keep mother motivated to breastfeed her baby
17	Get her friends to support her decision to breastfeed
18	Feed her baby every 2–3h
19	Comfortably breastfeed with her family members present
20	Comfortably breastfeed in public places
21	Finish feeding on one breast before changing to the other
22	Explain the rationale of demand feeding to the mother
23	Provide the mother with the rationale for feeding the baby overnight
24	Encourage the mother to exclusively breastfeed her baby for at least 6 months
25	Identify if the mother is satisfied with her breastfeeding experience
26	Convey the fact that breastfeeding can be time-consuming
27	Provide mother with strategies to meet her baby's breastfeeding demands
28	Tell when her baby is finished breastfeeding
29	Explain to the mother the benefits of breastfeeding
30	Explain to the mother the rationale for avoiding the use of a dummy (pacifier)
31	Explain why it is important that mother and baby should be have skin to skin contact for at least 1 h immediately after birth
32	Provide the reasons to the mother why "rooming in" is important
33	Identify to the mother the support services that are available to her as a breastfeeding mother
34	Instruct the mother in the differing positions that she can use for breastfeeding her baby
35	Identify if the baby sucking properly at her breast
36	Give rationale for the first breastfeed within the first hour after birth
37	Give rationale for not using a nipple shield

the University of Trieste, 10 (50% of the students attending the third year) at the University of Bologna, 9 (45% of the students attending the third year) at the University of Milan (Mangiagalli Hospital) and 7 (42% of the students attending the third year) at the University of Pavia.

The mean score values for each item of the questionnaire are reported in Table 3.

Table 3. Descriptive statistics of self-efficacy for the 37 items

Item	All students (n = 158)			
	Mean	SD	Median	% ≥ 3
1	1.68	0.63	2	5.1%
2	1.80	0.62	2	7.0%
3 (*)	1.90	0.62	2	10.8%
4 (*)	1.57	0.71	1	6.4%
5	1.82	0.76	2	19.0%
6	2.13	0.64	2	25.3%
7 (**)	2.26	0.64	2	37.2%
8	1.82	0.64	2	8.2%
9	2.20	0.61	2	29.1%
10	1.82	0.62	2	9.5%
11	2.06	0.69	2	22.8%
12 (**)	1.98	0.70	2	23.1%
13 (*)	1.94	0.71	2	18.5%
14 (*)	2.20	0.69	2	31.8%
15 (**)	2.06	0.73	2	26.3%
16	2.07	0.71	2	23.4%
17 (***)	2.12	0.68	2	27.1%
18 (*)	1.87	0.61	2	10.2%
19 (***)	1.94	0.66	2	14.8%
20 (****)	2.23	0.70	2	31.2%
21 (*)	1.94	0.66	2	16.6%
22 (**)	1.73	0.68	2	7.7%
23 (**)	1.94	0.61	2	11.5%
24 (****)	2.06	0.76	2	24.7%
25 (*)	1.90	0.64	2	13.4%
26	1.70	0.63	2	7.6%
27 (**)	2.14	0.60	2	24.4%
28 (***)	1.92	0.72	2	18.1%
29 (*)	1.43	0.66	1	4.5%
30 (**)	1.67	0.72	2	12.2%
31 (**)	1.35	0.64	1	3.8%
32 (**)	1.35	0.63	1	3.2%
33 (**)	1.99	0.73	2	25.6%
34	1.56	0.64	1	7.0%
35 (*)	1.56	0.61	2	3.8%
36	1.47	0.67	1	5.1%
37	1.99	0.70	2	22.2%

Notes: SD = standard deviation; % ≥ 3 = percentage of answers equal to 3 (It's difficult for me to do it) or 4 (It's very difficult for me to do it); (*) = 1 missing value; (**) = 2 missing values; (***) = 3 missing values; (****) = 4 missing values.

The areas in which students reported the lowest self-efficacy were: gaining the family support concerning the decision to breastfeed (item 7 with mean score = 2.26 and median score = 2), comfortably breastfeeding in public places (item 20 with mean score = 2.23 and median score = 2), breastfeeding the baby without using formula as a supplement (item 9 with mean score = 2.20 and median score = 2) and not to bottle-feeding for the first 6 weeks (item 14 with mean score = 2.20 and median score = 2).

On the other hand, the areas in which students reported the highest self-efficacy were: explaining why it is important that mother and baby should be have skin to skin contact for at least 1 hour immediately after birth (item 31 with mean score = 1.35 and median score = 1), providing the reasons to the mother why "rooming in" is important (item 32 with mean score = 1.35 and median score = 1), explaining to the mother the benefits of breastfeeding (item 29 with mean score = 1.43 and median score = 1) and giving the rationale for the first breastfeed within the first hour after birth (item 36 with mean score = 1.47 and median score = 1).

Discussion

This study aimed to estimate the knowledge and the level of self-efficacy of Italian Midwifery students in managing, advising and supporting new mothers who intend to breastfeed.

The selected survey (25) evaluated not only theoretical and practical knowledge, but also the abilities the participants believed they possessed in managing effectively complex situations during breastfeeding.

From the results it comes up that students from different Universities think they own the main skills which are necessary to support adequately the path of breastfeeding.

Analyzing in detail the results, students reported the highest self-efficacy in encouraging that mother and baby should have skin to skin contact for at least 1 hour immediately after birth (item 31), as described in the fourth step of breastfeeding according to WHO, comprehending the reasons why "rooming in" is important (item 32), which reflects the WHO seventh step of breastfeeding, knowing the benefits of breastfeeding (item 29), thus showing that they have acquired WHO and UNICEF principles, to convey them to new mothers and finally that they have acquired the notions of skin to skin contact within the first hour after child birth (item 36), necessary condition for a good breastfeeding start according to WHO.

The four areas in which students reported a lower self-efficacy were: gaining the family support concerning the decision to breastfeed (item 7), supporting new mothers in comfortably breastfeeding in public places (item 20), encourage the mother to breastfeed the baby without using formula as a supplement (item 9) as well as not to bottle-feed for the first 6 weeks (item 14).

It would be thus necessary to organize workshops for students regarding the items where it resulted difficult to support breastfeeding women. To do that, WHO and UNICEF proposed several campaigns aiming to promote breastfeeding through education and information of healthcare professionals (27).

It would be beneficial to a better education for midwives to credit the Midwifery Degree Course as "friendly to breastfeeding", as in Italy only 3 of 47 Courses of Degree are (28).

Limits

Since the study did not evaluate every single Degree Course as one, it is not possible to estimate the hours involved in theoretical preparation, practical labs and focus groups. The only common parameter is the 100 hours in the Maternity Ward. As the number of participants was quite limited it was not feasible to compare different context and outline differences among the realities examined.

Conclusions

The educative/formative context of the students attending the Midwifery Degree Course is multifactorial, varied and complex. Education of professionals has always been based on a strict relation between Theory and Practice and it becomes more and more imperative to combine the two. The level of empathy, preparation and support from the midwives benefit an exclusive and continuative breastfeeding with numerous advantages for both mother and baby.

The level of autonomy of new midwives is nowadays a neglected topic for scientific research. The fields in which a midwife can operate are wide and complex, so it is difficult for Degree Courses to evaluate it effectively only by the number of autonomous performances carried out in the three years of education.

People Healthy 2020 aims to increase the percentage of breastfed babies to 81, 9% and the percentage of exclusively breastfed for six months to 25,5% (29). For this reason, it is important to widen the knowledge and skills on breastfeeding and the association between those and the practical activity.

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

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Myanmar health professionals' educational needs: a pilot study

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Abstract. *Background and aim of the work:* The main factor hindering the development of the Myanmar health system lies in the scarcity of financial and human resources attributed to the health system. This paper presents the preliminary results of a pilot study on the educational needs of Myanmar health professionals, addressing the empowerment of human resources as a strategic pillar for delivering the essential packages of health services. *Methods*: An explorative study following a qualitative approach has been conducted through semi-structured interviews to a convenience sample of 15 persons, selected as authoritative key-informants. *Results:* In addition to the lack of infrastructures, medicines, ambulances and health instruments, and the health disparities between the urban and rural areas, some widespread problems are reported as requiring health professionals' training empowerment: traumas due to road accidents, management of childbirth, non-communicable diseases' management and poor health education of the population. *Discussion:* Some areas can be evidenced for an improvement of professionals, training: maternal, neonatal and child health; communication between professionals and laypeople; Myanmar population's health education; inter-professional training between doctors and nurses, but also between health personnel and non-health personnel. *Conclusions:* The educational needs of Myanmar health professionals emerge as closely related to the social and health needs of the Myanmar population, to the available resources and missing resources of the country's health system and to the role of professionals within professionals/patients' relationship. (www.actabiomedica.it)

Key words: Myanmar, health professionals, educational needs, Myanmar health system, Myanmar primary care

Introduction

After many decades of military rule, Myanmar transitioned to a civilian government in March 2011. Although the democratic process has accelerated since then, many crucial issues still remain unresolved, as the healthcare situation in the country has seen little improvement (1, 2).

Following the World Health Organization (WHO), Myanmar health system is placed at the bottom of the world rankings (3). The lack of attention to the health care delivery system of the country during over 50 years of military dictatorship has led to weak health infrastructures, low quality health care services, and insufficient number of adequately skilled human resources. Being the budget allocated to health extremely low, households' out of pocket spending remain the major source of financing for health, hence pushing households in poverty and preventing them from seeking necessary health care (4). The situation is further worsened by weak supportive supervision and referral, limited public financial management, oversight, leadership and accountability (4).

So far, specialized and tertiary care in urban areas has been prioritized at the expenses of basic essential care for the majority of the population residing in rural areas. In addition, human resources for health are inequitably distributed, with the majority of health workers largely concentrated in urban areas, hence leaving rural areas uncovered (5, 6). As a consequence, people residing in rural areas refer to private health care providers, such as general practitioners (GP), or to ethnic and community-based organizations (1).

In order to answer to the severe pitfalls of the country health system, the Government of Myanmar has set up the National Health Plan (NHP) 2017-2021, an ambitious path for a primary health care (PHC) system strengthening (HSS) as means to achieving universal health coverage (UHC) in the country by 2030. As to reduce disparities between rural and urban areas, the plan foresees a decentralization of health services and health resources, as centralization increases disparities. Major attention will be given to service prioritization, strengthened collaboration between health care providers, and community engagement. In particular, the Ministry acknowledges as a priority the development and empowerment of human resources for health both in public and private sectors as a strategic pillar for the delivery of the UCH essential package of health services (EPHS), hence recalling attention on the pivotal importance of tailored education for health professionals.

From a literature review conducted on Pubmed, Cochrane and Cinhal databases using as keywords “educational need” OR “training need” AND “health professionals” AND “Myanmar” OR “Burma” AND “assessment”, it emerged that there are no studies directly investigating the educational needs of Myanmar health professionals. However, the few available studies concerning the health needs of the Myanmar population, highlight some processes that would be more adequately managed through a better coordination and the improvement of health professionals’ specific skills. Among these: the need to strengthen the public-private partnership for what concerns the treatment of tuberculosis, which is managed in over half of the casis by general practitioners (7, 8); the need to involve health professionals in the health education of the population, in particular with regard to the management of postpartum (9) and diabetes (10); the improvement of the education of midwives (11) and nurses for what concerns the postoperative handover in orthopedic surgical setting (12); the need for an adequate training’s update regarding malaria’s early diagnosis and treatment (13). Furthermore, the largely unexpressed potential of interprofessional training between physicians and nurses is highlighted (14).

Aim

The purpose of this paper is presenting the preliminary results of a qualitative research on the analysis of the educational needs of Myanmar health professionals. The research aims at providing propedeutics to the co-construction of a post-graduate specialization sourse for Myanmar primary health care professionals, identifying during this first phase the most suitable themes and interlocutors for a training needs’ assessment.

Methods

The research, an explorative study following a qualitative approach, has been conducted through semi-structured interviews to a convenience sample of 15 persons, selected as authoritative key-informants about the aim of this research.

The interviews, collected between March and June 2019, have been conducted in person (6), or via email (9), in English or, when possible, in Italian. The interviews have then been faithfully transcribed and thematically analyzed through paper and pencil by a specially trained researcher under the supervision of an expert qualitative researcher.

The interview scheme has gauged some areas of investigation:

- Strengths and pitfalls of the Myanmar health system;
- Strengths and pitfalls of the education and training of Myanmar health professionals;
- Myanmar population health needs;
- Educational needs of the Myanmar health professionals;
- Relation between Myanmar health professionals and local population.

Results

A total of 15 professionals were interviewed, belonging to different professional roles and with different experience: 3 General Practitioners, 1 nurse, 1 hospital doctor/university professor, 1 expert of public health, 1 professor involved in the training and education of medical doctors, 3 health and social workers and 5 Italian medical students, having recently conducted an internship in Myanmar hospitals. In table 1 we describe the main characteristics of the sample.

In this study, the training needs that the interviewed professionals considered useful to fill or improve start from the reconstruction of the Myanmar socio-health context.

The highlighting of the most frequent pathologies with which professionals are confronted in daily clinical practice and the identification of resources, both human and material, made available to the system as well as lacking resources, enable respondents to identify areas of training that can be enhanced in order to respond more effectively to the health needs of the population.

The thematic analysis of the interviews has made it possible to enucleate four main macro-areas, connected between them and useful to individuate the educational and training needs.

Social and Health Needs of the Myanmar Population

The training of health professionals is - or should be - addressed to answer the health needs of the Myanmar population. With regard to the Myanmar context, the social and health needs mostly mentioned (perceived as most widespread or urgent) by the interviewed concern: communicable diseases as malaria, TB and HIV (especially in border areas, where prostitution is highly spread), rabies and dengue; non-communicable diseases, as diabetes, hypertension, stroke, cardiac problems and, more in general, debilities such as malnutrition and musculoskeletal diseases; finally, concerns related to road accidents and home births.

Table 1. Participants' characteristics

N°	Profession	Provenance	Main Features
3	General Practitioners	Myanmar	Experts of Public Health and Primary Health Care in Myanmar; focus on rural areas. Collaborating with Myanmar Health Authorities to strengthen Myanmar Health System
1	Nurse	Parma, internship in Myanmar	Internship at the Yangon General Hospital, focus on Palliative Care
5	Medical Students of the University of Parma	Parma, internship in Myanmar	Medical internship in Myanmar health structures: Yangon Central Women's Hospital (focus on Obstetrics and Gynecology), Yangon General Hospital (General Surgery, Medicine, Paediatrics)
3	Health Workers	Kawthaung	Experience in rural areas of Myanmar, in particular in the Kawthaung area; focus on Primary Healthcare
1	Teacher	Italy, working in Yangon	Teaching Italian Language to Myanmar Medical Students and to Myanmar Health Professionals
1	University Professor	Parma, experience in Myanmar	Expert of Public Health, and International Cooperation; involved in the collaboration between Italy and Myanmar. Experience in Myanmar (Yangon area, Kawthaung area, Mandalay area)
1	Expert of International Relations and Public Health	Parma, experience in Myanmar	Expert of International Relations, Public Health, Right to Health and International Cooperation; involved in the collaboration between Italy and Myanmar. Experience in Myanmar (Yangon area, Kawthaung area, Mandalay area, Border Area Myanmar-Thailand)

"The rector of the university of medicine, when we started working together, the first thing he wanted to do was to enhance emergencies because he says he gets so many cases of car accidents that they don't know how to handle them" (Interviewee 10)

"The main problem is the high percentage of home births (70%), which cannot always be performed immediately despite the fact that there are students and midwives who go there to carry them out" (Interviewee 6)

"In plantations, in rural areas [...] there are more common diseases but there is also a different rate of malnutrition of children [...], because they follow an extremely reduced varied diet, because they do not have access to a variety of foods. Other health problems are related to work on plantations: muscle pain, frequent accidents that require minor surgery, suturing of wounds, fractures and respiratory problems" (Interviewee 4)

Furthermore, the majority of the respondents considers that the scarce health literacy of the population is becoming an emergency: indeed, not being able to recognize the symptoms of certain diseases, people, especially in rural areas, arrive to the hospital in already advanced stages or after having resorted to homemade treatments having worsened their conditions.

This is linked to the deficiency of secondary prevention, in particular that of screening.

"With the exception of the population of large cities, that of rural areas completely lacks health literacy. They do not have the tools to understand the importance of prevention and to critically evaluate any health risks, even any kind of symptoms and signs of disease are ignored and neglected sometimes until it is too late to have a complete resolution" (Interviewee 6)

"In general surgery I have been able to observe many cases of colorectal and breast carcinomas treated only with palliatives because they were discovered in stages that are now too advanced" (Interviewee 6)

"Some patients are doing the wrong treatment themselves, for example, buying medicines without doctor's instructions, or using only herbal medicines. After many treatment errors they go to the hospital" (Interviewed 1)

Available Resources and Missing Resources

The majority of the interviewees individuates some structural problems related with the Myanmar health system. The first, with a cascading effect over others, is the scarcity of economic resources. The State finances health care with only 1% of per capita GDP (15) and this contributes to the fact that there are poor infrastructures, underpaid doctors, absence of specialist tools, insufficient medicines. A non-homogeneous allocation of resources between suburban and urban areas also worsens the socio-health condition of rural areas.

"The problem does not fall within the skills, but in the resources that are missing and consequently certain precautions cannot be implemented or simple investigations, as a CT scan, cannot be carried out for us whenever necessary" (Interviewee 10)

The totality of those interviewed recognize, among the main pitfalls of the Myanmar health system, the scarcity of medicines and means of emergency transportations (i.e. ambulances) provided with lifesaving equipment.

"If there is an emergency and you load a person in the car, say that you can transport the person to the hospital, but there is no equipment on the ambulance to revive, defibrillate so it is not enough anyway. Patients don't know how to get to the hospital or community center, or to the clinic" (Interviewee 3)

"Doctors don't have many medications available except a great amount of paracetamol, aspirin, and little else. The stations hospitals have sixteen beds and therefore the supply of medicines is calibrated on those sixteen beds and does not take into account the outpatient department. Therefore, even if the problems are the same as in the city, the stocks of medicines are exhausted immediately so then patients must buy them in pharmacies. This is easier in the city because there are pharmacies" (Interviewee 11)

The lack of human resources is the first immediate consequence of the scarcity of economic resources: in hospitals there are few doctors, underpaid, while in rural clinics very often there are no doctors but people who have received health education and therefore able to provide basic care or, at best, recent graduates who carry out an internship period.

"There is only one doctor who works at the station hospital, and sometimes only two or three doctors who work at the same hospital need to see 200 patients, sometimes 300 patients, and in addition there are over 50 ill patients in hospital" (Interviewee 15)

The majority of the interviewed, however, identify the main strength of the Myanmar health system in the adaptability and inventiveness of its health professionals, who try to compensate for the few resources available with the provision of quality care.

""Adapting" in medicine is not easy, it means [...] having to assist people in disastrous conditions due to the absence of screening techniques, seeing children die from intoxication or overdose due to abandonment. In these life experiences I have identified the true essence of being a doctor, the true essence of working for others and for the future of one's country with the ability to "adapt" to the situations in which we find ourselves by introducing knowledge and professionalism" (Interviewee 6)

Supporting the work of professionals would also be the attitude, attributed above all to the younger generations, to the creation of voluntary associations that seek, through their activity, to improve the quality of life of people, very often financed by religious communities.

"The new generations want to fight, they want to grow, they want to see, they want to know and learn. This is the great strength: having a society that is certainly no longer in a decadent phase" (Interviewee 1)

"There are also [...] charities, charity organizations, which raise funds for the less well-off to pay for health care" (Interviewee 4)

It is also widely believed that awareness-raising campaigns on the prevention of certain diseases, such as malaria, and vaccination campaigns are now effective and efficient both in the urban area and in the suburban areas:

"Thanks to the presence of international organizations operating in the area, the State is implementing vaccinations for newborns. Although it is still common to find measles cases in pediatric patients, the situation from a general point of view has improved significantly compared to the past 5 years (assessment made by the pediatric primary)" (Interviewee 9)

Role of Professionals and Professionals/Patients Relationship

The interviewees claim that doctors are socially respected in Myanmar and that the population places extreme trust in these professionals, especially as regards the formulation of diagnosis and the prescription of certain treatments.

"The decisions they make are unlikely to be contested, on the contrary, there is a tendency to blindly trust their abilities and the certainty that the treatment chosen is undoubtedly the best" (Interviewee 1)

The analysis of the context has provided important data that differentiate, in suburban and urban areas, the consideration of the doctor by the population and the latter's approach to patients. Especially in the suburban and rural areas of the country, where the relationship with the doctor is more confidential and familiar, the doctor is seen as a "hero" from whom people feel totally taken care of. Interviewed noted that the doctor acts through a holistic approach towards the visited patient.

"Doctors are like heroes, they are like God, they are healers" (Interviewee 11)

"The attitude they have towards the person as a person and not just as a patient. Since they don't have so many tools to diagnose or do tests, they work more on the relationship with the patient, in listening to his/her personal history" (Interviewee 6)

"The doctor does his very best to put the patient in the best condition to follow the therapy. So, for example, in the case of an illiterate patient, the doctor writes the therapy with symbols to make him/her understand at what time of day or evening the medicines are to be taken or for how long" (Interviewee 5)

Instead, interviewed who completed an internship in urban areas say that communication between doctor and person is very poor, as doctors believe that patients cannot understand health information. Furthermore, in this context, doctors often use English as the vehicular language, which cannot actually be understood by the majority of the population.

"Doctors themselves say that the patient is unable to understand a certain type of information and therefore they do not try to make them aware of what is going on. Another noteworthy problem is that doctors among them often deal with different cases in English, and this creates even greater social detachment between doctor and patient, who in most cases cannot understand it" (Interviewee 2)

Even with respect to the role of the nurse, there is a substantial difference between urban and rural areas. The interviewed argue that, in the urban areas, nurses occupy positions that are not essential and not complementary to the role of the doctor. Therefore, very often, nurses are stressed and frustrated by the lack of responsibility within the structures and the tasks they are called upon to perform are mainly the administration of medicines, patient hygiene, bandages and bureaucratic issues. What in Italy is the job of the nurse in Myanmar seems to be done by the student of the last year of medicine, called "house surgeon", who in fact makes withdrawals, inserts catheters, etc.

"The nurse is not yet included in daily work as a supporting and complementary figure to that of the doctor" (Interviewee 3)

"They are often defined "stressed" for being allowed to do so little within the healthcare facility" (Interviewee 5)

"The nurse tends to deal with the patient's oral medicine, washing or changing bandages and bandages" (Interviewee 5)

The interviewed point out that nurses normally do not take part in consultations with doctors and that therefore the team work model or integrated assistance is not present.

"I have never seen the nurses stop to consult with the doctors in the ward or with the professor during the examination tour, although they take part in it. Doctors often use lunch breaks to organize presentations of particular cases and discuss them together, nurses do not participate" (Interviewee 6)

Among the interviewed there is only one discordant opinion, which gives the nurse in urban areas a key role in the care and reports a good team work with the doctors.

It is in fact especially in rural areas that most of the interviewed recognize a fundamental role for the nurse in taking charge, in patient care and in providing this also with basic health education. From the collected interviews, it emerges that the nurse is an essential figure within an integrated model of care, whose presence allows to assist more patients in a limited period of time.

"When the patient arrives in the clinic, he/she is immediately taken care of by the nurse, who takes the measurements, the parameters and then passes to the doctor's visit, who makes prescriptions of therapies and then goes back to the nurse, who administers the therapy and who also gives medicines and explains well how medicines should be administered at home" (Interviewee 9)

"The nurse is necessary. The integrated care model allows us to speed up the work a bit because the clinic is quite crowded and if the doctor had to manage the situation entirely by himself, he wouldn't be able to treat more than 20 patients a day in this case instead, he can visit up to 50 or 60 patients" (Interviewee 9)

Finally, as regards the relationship between nurses and patients, the persons interviewed are divided equally between those who claim that the nurse is the health worker closest to the patient who receives special attention and loving kindness, and those who say instead that the relationship between nurses and patients is a very cold and distant because the time available is limited.

"As part of this role the nurse also has a greater relationship with the patient's relative also for organizational aspects. During hospital visits I have always seen them very attentive and loving towards the patient" (Interviewee 5)

"The time they spend with the patient is very little and therefore also the patient-nurse relationship is almost non-existent or in any case distant" (Interviewee 7)

Professionals, Training Needs

According to the interviewed, training of medical and nursing staff is well structured, despite the fact that there is a lack of homogeneity in the quality of education in relation to the different areas of the country and the need for updating. If nurses can become nurses through a university or a professionalizing diploma, which in both cases consist of frontal lessons and traineeships, medical training in Myanmar follows the British model and, in fact, lessons and exams are held in English. A professional civil service of at least two years is compulsory for doctors.

"Medical training in Myanmar is very similar to ours considering that they have to do civil service for at least two years, the type of study is certainly different from ours, it is much more practical and schematic, characterized by lists carefully repeated by students by heart" (Interviewee 5)

Most of the persons interviewed believe that the training provided is capable of training competent professionals both as regards doctors and nurses, who are prepared in terms of practice and also of resource management.

"They are very prepared and trained for the health requests of the population" (Interviewee 4)

"Doctors know how to manage their resources very well. Without having laboratory and instrumental reports available in a short time they are very good in clinical evaluation with anamnesis and objective examination of the patient" (Interviewee 10)

The analysis shows that the expertise reached by many of these doctors is also due to the fact that they specialize abroad (United States, England) and then return to work in Myanmar.

"Often many students specialize abroad in countries such as the United States or England, therefore coming into contact with realities that are much more advanced and richer from an economic point of view than their country of origin, but most of them return to their native country to practice" (Interviewee 5)

In general, the interviewed find that Myanmar health personnel need updating, especially as regards the identification of symptoms of some widespread diseases, the area of prevention and that of Public health. In addition to training on basic surgical treatment, medicines for families and emergency medicine, there is also the need to train specialized health workers.

"Healthcare workers may need both short-term and long-term education" (Interviewee 15)

"Working simultaneously on the dissemination of general practitioners' skills and also on prevention and health education" (Interviewee 2)

"The role of midwives should be strengthened" (Interviewee 2)

"The quality of our nurses must be improved" (Interviewee 15)

"We would like to enhance everything that makes you avoid going to the hospital. In a country with few resources and a vast territory, the most important thing in my opinion is to work on the "before", you end up in the hospital" (Interviewee 2)

Rural areas feel the need for training specifically aimed at managing the doctor-patient relationship:

"At hospital level in Kawthanung they have shown interest in receiving training regarding the development of the doctor-patient relationship and therefore for the management of this relationship. I do not know if they feel the need to have training in this sense because university education does not include any relative activity or if they need updating training" (Interviewee 11)

Discussion

Both the literature analyzed and the interviews collected agree that the first and most serious factor hindering the Myanmar health system lies in the scarcity of financial and human resources attributed to the health system. As underlined by Han (1), the limited resources allocated to health system and lack of a national insurance mechanism, lead to out of pocket payment, which is likely to be an unbearable burden for the majority of the population, especially for people with chronic illness. The missing of human resources, accordingly to Saw et al. (6) is mainly due to a mismatch between supply and demand for health and to the brain drain of health professionals to places with better working conditions or to the private sector. As emerges from the analysis of the interviews, in hospitals there is a limited number of underpaid medical doctors, whilst clinics in rural areas generally lack medical doctors and are provided with people with a limited health education. The low level of literacy of the population, in turn, is associated with a lack of health awareness and low demand for health care (2). This is one of the reasons why it is clear that health policies and programmes must aim for synergy with other sectors (education, employment, economic and rural development). This collaboration, especially at skills level, training and equipment supply, is considered by interviewed positively, as they define, for example, as fertile the collaboration with NGOs, voluntary, ethnic and religious organizations that operate on the territory.

Studies in literature agree on highlighting wide health disparities between the urban and rural areas of Myanmar. The same finding emerges recurrently in the interviews collected for this study, which identify for example HIV as a widespread problem especially in the border and southern areas of the country or the problems related to malnutrition, muscle pain and bone fractures especially in plantation areas. Traumas due to road accidents, management of childbirth, diabetic pathology and poor health education of the population, which leads to late diagnosis, are instead reported as problems that afflict the Myanmar population regardless of the region of residence. Already in 2008 Muecke et al. reported a need for programs in Myanmar to induce a behavioral change in diabetic patients with regards to screening examinations (10). One area that they report as needing more training for GPs is that which concerns regular fundal screening of diabetic patients.

GPs are the first point of contact also as regards the timely diagnosis of tuberculosis. If in 2009 there was still a considerable delay found between the onset of symptoms of tubercolosis and seeking treatment (7), denouncing the need for high technical quality of care and guidelines to interact with the private sector for the management of the disease, our interviewed today bring tuberculosis as example of those diseases on which targeted health interventions have allowed great progress. Soe and colleagues, as well, in 2017, detected how national tubercolosis programs benefited from the fundamental support of international non-governmental organizations, especially in those settings where community involvement had proved necessary (8). A similar case is that of malaria. Nyunt et al. (13) reports local health volunteers as the major human resources for diagnosis of malaria using RDTs in containment areas and invites reflection on the need to homogeneously implement training sessions, refresher courses and supervision to allow these volunteers to continue efficient work already started. The training and periodic updating of health workers is a need perceived as essential by our interviewed not only with regard to GPS but also with regard to the figure of midwives. The management of childbirth in fact emerges from the interviews as a current criticality in Myanmar, especially when this takes place at home and without specific professional health care. Indeed, literature shows that skilled birth attendance, both independently, and in concert with packages of integrated reproductive health services, emerges as a critical strategy to reduce maternal mortality (11). Once again, this criticality is especially evident when we talk about the peripheral areas of the country where, in the event of an emergency, women do not have the possibility, due to insufficient infrastructure, to move to specialist clinics. Therefore, it is essential ensuring that healthcare providers supporting women in home deliveries, should an emergency occur, have all the necessary resources to quickly transfer women to appropriate facilities. In this as in other critical situations, the education and health training of the patients themselves is very important. The literature and the interviews in this regard indicate that, due to an insufficient health culture and poor literacy, patients return to do-it-yourself treatments that prove to be harmful to their health, even in the case of child delivery. Despite maternal healthcare programs emphasizing the receipt of antenatal care and its related components, this study suggests that there may be a lack of culturally appropriate and sensitive postnatal care information, which may cause women to practice potentially harmful traditional practices (9). The midwife figure therefore appears essential and of fundamental importance, also in the preventive field, but nevertheless the literature on the subject underlines that they have lacked the preparation and authorization needed to provide the full range of globally recommended services expected of skilled birth attendants (11). From the collected interviews, the methods of collaboration and communication between doctor/nurse/patient also seem to express themselves differently in the health contexts of urban and rural areas. In fact, the majority of respondents say that in urban hospitals, nurses take care of low-responsibility tasks (washing the patient, changing bandages, oral administration of medicines) and are not very involved by doctors in consultations relating to the treatment of patients, obtaining often feelings of frustration. In rural areas, however, the nurse would have, in the words of the interviewed, a role complementary to that of the doctor and of recognized importance with respect to the competent taking charge of the patient, including also the latter's health education. Burgess-Shannon et al. (14) note, in the context of pediatric care, that inter-professional education is not yet widely used in Myanmar and that it would be beneficial and welcomed by practitioners, encouraging communication and teamwork, preparing them for collaborative practice. Good communication between members of the health team and good inter-professional collaboration practices are also reported as necessary by Tun et al. (12) which identify, in Orthopedic surgical setting, postoperative handovers as a critical step in the management of surgical patients and a well-recognized risk factor for patient safety. Exchange of patients' critical information between the care providers (especially when nurses and physicians) are an important phase of perioperative care.

A lack of attentive listening to verbal handovers and task-oriented practice was a common experience of handover personnel, according to Tun et al.'s work (12), which highlight as a challenge to overcome this ineffective form of teamwork and communication.

Conclusions

The limitations of this research are mainly linked to the small sample size and the heterogeneity of the respondents' roles. This is due to the fact that this research is a pilot study: the exploratory interviews, on a small scale, had, in fact, the purpose of obtaining information that allow to determine the size and composition of the final study sample.

Despite the limited sample of interviewed, which allows us to make only some preliminary hypotheses on the training needs of Myanmar health professionals, a convergence can be observed between what has been highlighted by the most recent scientific literature on the subject and what has been found during this investigation. Beyond the structural limits that the organization of care in Myanmar is facing, mainly due to the socio-economic situation of the country, some areas can be evidenced for an improvement of professional training that could be effective for a better quality of care and assistance.

Among these, the following stand out: the area of maternal, neonatal and child health, which requires a more effective education (including health) of the population and a more qualified and specialized training of midwives; the field of communication between professionals and laypeople, aimed at more timely diagnosis and easier long-term management of chronic diseases, as well as effective basic health education for the population. The latter, in fact, could discourage harmful DIY treatments, delays in accessing treatments and limit, for example, the spread of communicable diseases. Finally, an area still underdeveloped and widely promising is that of inter-professional training, between doctors and nurses, or other health workers, but also between health personnel and non-health personnel (educators, teachers, volunteers, etc.), in the perspective of taking charge of health issues capable of embracing not only the needs of individuals, albeit in a holistic perspective, but also taking into account the socio-cultural and economic context in which certain diseases and health problems still find today an extremely easy ground to develop.

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

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Original article: The opinions and needs of health professions

Job stress and needlestick injuries in nurses: a retrospective observational study

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Abstract. *Background:* The prevention of needlestick injuries (NSIs) in nurses employed in Emergency Departments (EDs) represents a special issue for healthcare organizations globally. Stressful working conditions, lack of organizational arrangements and lack of supporting one another at work, may contribute to increase the risk of NSIs. *Methods:* We conducted an observational study to analyze: 1) the effectiveness of organizational interventions to minimize the occurrence of NSIs in ED nurses; 2) to measure the impact of such interventions on the safety budget. *Results:* The occurrence of NSIs detected after organizational level interventions was significantly lower than the occurrence observed previously such interventions ($p<0,05$). By results, cost saving from managing fewer NSIs than the previous period was found. *Conclusion:* The study shows that the proactive, integrated and comprehensive management of organizational features at workplace brings benefits to employees and reduces the burden of the occurrence of NSIs. As result of the reduced NSIs frequency, the overall costs for follow-up of injured workers were reduced. (www.actabiomedica.it)

Key words: Emergency Department, healthcare worker, stress, risk management

Introduction

Needle stick injuries (NSIs) are frequently received by people handling needles in the medical setting and represent risks to health care workers (HCWs) worldwide (1-4). The World Health Organization estimates that every year 3 million healthcare workers experience percutaneous injuries (5). The National Institute for Occupational Safety and Health (NIOSH) USA has defined NSIs as injuries caused by needles such as hypodermic needles, intravenous (IV) stylets, and needles used to connect parts of IV delivery systems (6). The frequency of such events has been estimated to be about 600,000-800,000 cases annually in the USA (7), 100,000 NSIs occur in the UK (8) and 500,000 in Germany (9). These data underline that HCWs are at risk of acquiring blood-borne diseases; in fact by literature is reported that among HCWs the risk for acquiring infections with HCV, HBV, and HIV attributable to occupational exposure to percutaneous injuries is estimated to be 39%, 37%, and 4.4% respectively (10). The economic cost of NSIs among HCWs varies country to country, due to different study methodologies; by the available reports the cost per year estimated in Germany is between €4.6 million and €30 million, $6.1 million in France (considering nurses alone), €72 million in Italy (not considering long-term treatment, compensation or indirect costs) (11).

The cost per reported NSI (12,13) is due to interventions such as:

- Testing for infection in the injured worker and, if known, the patient on whom the sharp had been used.
- Post-exposure prophylaxis (PEP) to prevent or manage potential blood-borne virus transmission.
- Short- and long-term treatment of chronic blood-borne viral infections that are transmitted to injured workers.

- Staff absence and replacement.
- Counselling for injured workers.
- Legal consequences (e.g. litigation and compensation claims).

HCWs employed in Emergency Department (ED) are particularly exposed to NSI risk, due to specific occupational risk factors linked with the ED healthcare professions such as high exposure to physical and biological risks, variable workloads, increasing and unpredictable job demand and three shift work (1, 12-14). In a recent study Weaver et al. observed an association between shift length and the risk of occupational injury and illness among Emergency Medical Services shift workers (15). The risk of injury was 60% greater (RR 1.60; 95% CI 1.22 to 2.10) for employees that worked shifts >16 and ≤24 h. Stressful working conditions, lack of organizational arrangements and lack of supporting one another at work, may contribute to increase the risk of NSI among HCWs (16-20). Furthermore, recently, Loerbroks A. et al. highlighted that the occurrence of NSIs is a predictive factor of less favorable perception of psychosocial work (19).

A study conducted among japanese nurses showed that hospital safety climate has an important influence on NSI injury rates and reporting behavior among nurses (20); in fact, the interventions focused on the context area of the work, such as being involved in health and safety matters and being properly trained in risk control procedures, were associated with a reduced NSI risk. In a recent our study (21) we found the efficacy of primary-level interventions focused on work context area to minimize work-related stress (WRS); the interventions were focused on team development, on implementing safety training programs, and on adopting an ethics code for HCWs (Table 1).

Based on these evidences we conducted a retrospective analysis of the occurrence of NSIs among the HCWs (Nurses) employed in an Hospital ED, in Salento, Italy, before and after the implementation of such organizational interventions. The aims of this study were: 1) to investigate the interactions between organizational level interventions focused on WRS and the occurrence of NSIs among ED nurses; 2) to determine the impact of such interventions on the economic burden of NSIs.

Methods

In the period between 2011 and 2014 was conducted an observational study to detect and analyze in different work settings the level of WRS among the ED HCWs (physicians and nurses) of the Local Health Authority, in Salento, resulting from organizational changes (21).

The study was performed using the multidimensional validated tool developed by the Italian Network for the Prevention of Work-related Psychosocial Disorders, in accordance with the Consultative Committee's specific requirements (22-24). In that study (21) the authors showed that the implementation of improvement interventions focused on team development and safety training programs, effectively and significantly reduced the WRS risk in the workplace from medium to low level. The results of the investigation highlighted that "work context" was the priority area of organizational interventions aimed to reduce WRS (Table 1). After such investigation, the authors compared the NSI occurrence among the nurses employed in the ED in the period january 2016 - december 2018 and in the period between january 2013 - december 2015, respectively after and before the adoption of organizational improvement interventions. The study population was the same, before and after such improvement interventions and is reported in Table 2. The study was conducted in an ED that had more than 100,000 admissions annually. The equipment of safety medical devices aiming to prevent percutaneous exposure injuries caused by needles was the same in the two periods examined and included blood collection systems, intravenous systems, injection systems, multiple devices and sharps containers intravenous. About the second objective of the study, the economic impact of NSIs was defined as: 1) direct cost of baseline and follow-up laboratory testing of each exposed HCW 2) direct cost of testing the source patient 3) cost of post exposure prophylaxis and other treatment that might be provided. In Italy the average cost of such post-exposure interventions was estimated by 850 € per reported injury (24); such cost doesn't consider long-term treatment, compensation or indirect costs. In this study the authors estimated the direct cost of NSIs per 100 full time equivalent (FTE) positions (Nurses) per 3-year.

Table 1. Work context critical issues and improvement interventions

Area of critical issues	Intervention
Function and organizational culture	- working towards goals that include occupational safety and wellness - adoption of a safety management system - adoption of code of ethics for healthcare workers
Role within the occupational organization	- clear definition of occupational roles - knowledge of hierarchical roles for occupational safety - employee involvement in corporate decision-making
Relationship at work	- communication with management staff - reflective dialogue and feedback among workers - clinical supervision in relation to WRS - constructive conflict

Table 2. Study population

Nurses	130
Gender (%) (M-F)	48 (37%) - 82 (63%)
Age (M-F) (SD)	45,8 (±2,9) 43,4 (±4,1)
Years of work (M-F) (SD)	22,9 (± 2,9) 20,7 (± 3,7)

Statistical analysis

The statistical analysis of the data was based on the calculation of the average, the standard deviation, the distribution, and the range in accordance with the nature of individual variables. The differences between the percentages and between the averages were compared using, respectively, the chi square test and the Student's t- test for continuous data. Differences were considered significant for values of $p<0.05$.

Results

The cumulative 3-year incidence of NSIs occurred after the implementation of management stress interventions (period 2016-2018) was significantly lower than the cumulative 3-year incidence occurred in the period 2013-2015 (previously such implementations) (10,77 injuries per 100 FTE positions vs. 26,15 injuries per 100 FTE positions; $p<0,01$ chi square test); the organizational interventions resulted effective in minimizing the occurrence of NSIs (OR=0,34; 95% CI = 0,17 - 0,67). No significative differences were found in the gender distribution of the NSIs, age and years of work of injuried nurses in the two periods investigated ($p>0,05$) (Table 3). The number of accesses to the ED in the 3-year periods analyzed did not show significant differences ($p>0,05$). Cost savings from managing fewer NSIs in 3-year period 2016-2018 than the 3-year period 2013-2015 was estimated at €13.073,00 per 100 FTE positions (nurses) per 3-year.

Table 3. Gender, age and years of work of injuried nurses, per year (SD)

Year	2013	2014	2015	2016	2017	2018
Gender(%) (M-F)	27,5-72,5	23,2-76,8	28,9-76,1	25,4-74,6	26,3 - 73,7	28,3 - 71,7
Age (years) (M-F)	45,2 (±3,7) 44,1 (±4,1)	43,7 (±3,1) 47,4 (±3,5)	46,6 (±4,4) 45,7 (±2,8)	42,9 (±2,9) 44,1 (±3,1)	46,2 (±3,7) 45,3 (±3,4)	48,2 (±4,4) 44,3 (±2,8)
Years of work (M-F)	23,4 (±2,9) 25,1(±3,4)	23,7 (±3,1) 26,5(±2,5)	24,9 (±3,4) 19,7(±3,1)	22,1 (±2,7) 18,7(±3,9)	24,4 (±1,8) 26,6(±3,2)	25,4 (±3,8) 19,6(±2,1)

Discussion

In this study the organizational level interventions aimed to minimize WRS through improving the work context area, were effective in minimizing the occurrence of NSIs among the ED nurses. The aim of the interventions was to encourage the participatory solution-oriented steps involving managers and workers in primary prevention and working conditions improvement. In particular, proactive interventions focused on the area of "Function and organizational culture" consisted in the organization of occupational safety trainings for Head Physicians and Head Nurses; the targeted were: 1) the implementation of an organizational model based on the achievement of occupational safety objectives; 2) the style of management focused on the support towards workers and on the listening skills; 3) the implementation of a safety system managed by Head Physicians and Head Nurses. The Company Management established, in addition, the code of ethics for healthcare workers. In order to the interventions about the area of "Role within the occupational organization", the authors organized the training for all HCWs, designed to explain the work roles and to encourage the involving of workers in decision making process. The improvement of the issues related to the area of "Relationship at work" was obtained by the training of Head Physicians and Head Nurses; the objectives of the training were: 1) to improve communication skills 2) to ensure the reflective dialogue and feedback among workers; 3) to manage conflict constructively. Head Physicians and Head Nurses were, also, trained in the workers' supervision about occupational hazards, including WRS". (Table 1).

The evaluation suggested us to train Head Physicians and Head Nurses about a supportive leadership style, as effective in moderating to reduce the stressors to which HCWs resulted to be exposed. A success factor for this improvement intervention was certainly the high motivation of Head Physicians and Head Nurses toward the process of change.

The study has some limitations: 1) the period investigated is short to draw strong conclusions about the relationship between stress management interventions and occurrence of NSIs. 2) the analysis is conducted on a small sample; 3) the results of this study are referred to the NSIs and do not take into account other types of injuries.

Further longitudinal studies will be necessary to clarify the relationship between stress management interventions and occurrence of NSIs.

Highlights

We conducted an observational study to detect and analyze the level of WRS among healthcare workers of an Emergency Department.

The study allowed to suggest organizational interventions aimed at reducing the sources of WRS.

The organizational interventions resulted effective in minimizing the occurrence of NSIs

The study showed the cost savings from managing fewer NSIs

The management of WRS brings benefits to employees and reduces the burden of the NSIs occurrence.

Ethical approval and consent to participate: The study was performed as part of the obligatory evaluation of work related stress, required by Italian Legislative Decree 81/08, and needed no formal approval by the local ethics committee and needed no consent to participate.

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

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Original article: The opinions and needs of health professions

Investigate the sexual habits of young people: a cross-sectional study among nursing students of the University of Palermo

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Abstract. *Introduction:* Sexually transmitted diseases are an emerging problem especially among young people, increasing the burden of disease in this population. The aim of the study was to evaluate sexual habits, sexual relations and knowledge of STIs among the students in the nursing science course of the University of Palermo. *Materials and Methods:* In April 2019, a survey was provided to students that investigate on: personal information and habits, knowledge of sexually transmitted diseases, anti-HPV vaccination. Multivariable logistic regression was performed, considering it as a dependent variable "Have you occasionally had unprotected sex (without a condom)? Yes", in order to evaluate the role of the variables of the questionnaire. Results are expressed as adjusted Odds Ratio (aOR). *Results:* 405 students completed the questionnaire**.** The mean age of the sample is 21.65 years, 69.63% of the interviewees are women. The multivariable logistic regression shows that the risk of having occasional unprotected sex (without condom) is significantly associated with "Do you permanently have unprotected sex (without a condom)? Yes" (aOR 4.46); "Have you ever received information on sex education and/or sexually transmitted diseases? No" (aOR 6.02); "Age Class <22 years old (aOR 2.03); "Number of sexual partners: As the unit increase" (aOR 1.18). *Conclusions:* Too many young people receive confusing and conflicting information about relationships and sex, as they make the transition from childhood to adulthood. Nurses play an important role in promoting public health. The study showed that young students are not still enough sensitized on sexually transmitted infections and preconception care. (www.actabiomedica.it)

Key words: nursing students, sex, Sicily, unsafe sex, sexually transmitted diseases, sexual behavior, questionnaire

Introduction

In the last few years, much attention has been focused on understanding casual sex, or hooking up, among college students. The new EURISPES (Institute of Political, Economic and Social Studies in English; Istituto di Studi Politici, Economici e Sociali in Italian) (1) research conducted on Italian people between 18 and 30 years shows that youth sexuality has changed a lot in recent years. 6 boys out of 10 have casual sex with often different partners. The 39.9% of respondents always use contraception, 23.8% never or rarely use them. Sexual activities among the younger are now quite precocious, and boys in particular thought that they have not get all the information they needed (2). The research showed that men and women who learned about sexual matters at school experienced first sexual intercourse at a later age than those who got their information from other sources such as friends or the media (2). In an article published in the Journal of Sex Research, a group of American researchers investigated the factors and circumstances that drive young university students (18-21 years of age) to casual sex (3). A first interesting fact that emerges from the research is that casual sex is not at all an infrequent experience, but rather concerns over half of the sexually active boys involved in the research. Casual sex, however, all too often takes on a negative connotation: in most studies on the subject it is hypothesized that the increase in sporadic sexual relations is one of the direct causes of the deterioration of psychological health (3-4) in people and may, above all, have as a direct consequence the increasing increase in sexually transmitted diseases (5). This last hypothesis is corroborated by the fact that during occasional relationships, a large proportion of young people do not take precautions or, if they use contraception, they do not use condoms (5,6). The non-use of condoms is justified for economic reasons (condoms cost from 6 to 12 euros per pack) but also "practical": the condom for young people reduces sensitivity and sexual pleasure, and also the transgression and the adrenaline rush of risk take on an important meaning in sexuality (6). A number of studies have demonstrated that high levels of stress (7,8) and alcohol abuse (9,10) can be an extra risk factor for the implementation of sexual misconduct. The history of sexually transmitted infections (STIs) and their associated control efforts in Europe during the 19th and 20th centuries have been well documented (11). Nurses have been involved in the management STIs and their role has varied from that of the technician to one in which they are able to provide first line. It appears that nurses have often been called upon in times of crisis and need—their role often evolving only through demand for services and personnel. Barriers to developing the role of the nurse continue to exist as we move into the 21st century. The role of the nurse has evolved over the past 150 years and this suggests how past lessons can help enhance the contribution nurses will make to the future of STI management and control. Progress in the role of the nurse has often corresponded with changing epidemiology of STIs.

Objectives

The aim of the study was to evaluate sexual habits, sexual relations and knowledge of sexually transmitted infections (STIs) among the students in the nursing science course of University of Palermo.

Materials and methods

Study design

It's a cross-sectional study. Simple random stratified sampling without replacement was performed. This study was approved by the Ethical Committee of the University Hospital "P. Giaccone" of Palermo, Minutes No. 02/2019 (16. Studio MST3) of February 18, 2019.

Participants

In the first week of April 2019 (1-5 April 2019), a survey was provided to all students who attend daily lessons in the nursing science course of University of Palermo of the three years of course, accompanied by informed consent, daily lessons are mandatory to take the exams. The questionnaire was administered to 100% of the students who attended the lessons during the study period (411 students). 100% of the first-year students who received the questionnaire agreed to complete it. 100% of the second-year students who received the questionnaire agreed to complete it. 93.55% of the third-year students who received the questionnaire agreed to complete it, 6 students refused to complete the questionnaire.

Instrument

The questionnaire was created by the authors based on previous studies (5, 12), asking in addition if the interviewee has had unprotected sex and the reason why. The questions investigate on: personal information, sexual habits, sexual relations, knowledge of sexually transmitted diseases, the perception of the economic and health status, anti-HPV vaccination. The following question was also asked: "If you have you occasionally had unprotected sex (without a condom), Why?".

Data Analysis

The variable "age" was subsequently dichotomized in < 22 years and ≥ 22 years because of the mean age of the sample was equal to 21.65 years old; the variable "Age at first sexual intercourse" was subsequently dichotomized in < 17 years and ≥ 17 years because of the mean age of the sample was equal to 16.75 years old. For all variables absolute and relative frequencies have been calculated. Multivariable logistic regression was performed, considering it as a dependent variable "Have you occasionally had unprotected sex (without a condom)? Yes", in order to evaluate the role of the variables of the questionnaire. The statistical significance level chosen for all analyzes was 0.05. The results were analyzed using the STATA statistical software version 14 (13). Results are expressed as adjusted Odds Ratio (aOR) with 95% Confidence Intervals (95% CI).

Results

405 students completed the questionnaire. The mean age of the sample is 21.65 years (Standard Deviation ± 3.24), 69.63% of the interviewees are women, 100% were born in Italy, 53.58% are engaged, 45.68% report to attend the first year of study, 32.84% attend the second year of study and 21.48% the third year. 40.25% were in-site students, 72.59% report a low perceived economic status, 15.06% report a low perceived health status, 94.81% are heterosexual, 75.31% declare to have had complete sex, 48.44% declare to have had occasional unprotected sex (without a condom), 54.81 defines its knowledge in relation to sexually transmitted diseases as poor (Table 1). 150 students answered the question "if you have occasionally had unprotected sex (without a condom), Why?" and for 45.33% of which the answer was "Because I use other contraceptive methods" (Table 2). Table 3 shows a multivariable logistic regression based on 336 observations. Adjusted Odds Ratio are presented. Each independent variable is adjusted for all the other independent variables. The analysis shows that the risk of having occasional unprotected sex (without condom) is significantly associated with "Do you permanently have unprotected sex (without a condom)? Yes" (aOR 4.46, 95% CI 2.44-8.16); "Have you ever received information on sex education and/or sexually transmitted diseases? No" (aOR 6.02, 95% CI 1.32-27.54); "Age Class <22 years old (aOR 2.03, 95% CI 1.08-3.80); "Number of sexual partners: As the unit increase (aOR 1.18, 95% CI 1.07-1.31).

Discussion

The control and management of sexuality have been a subject of concern in recent years (14). As they grow up, young people face important decisions about relationships, sexuality, and sexual behavior. The decisions they make can impact their health and well-being for the rest of their lives. Too many young people receive confusing and conflicting information about relationships and sex, as they make the transition from childhood to adulthood (15). Comprehensive sexuality education is a process of teaching and learning about the cognitive, emotional, physical and social aspects of sexuality. It aims to equip young people with knowledge, skills, attitudes and values that will empower them to realize their health, well-being and dignity; develop respectful social and sexual relationships; consider how their choices affect their own well-being and that of others; and understand and ensure the protection of their rights throughout their lives. The goals of the current study were to examine sexual habits, sexual relations and knowledge of STIs among the studentsin nurse at the University of Palermo. The population in study is represented by students of Health Professions, therefore in the field of Medicine, and probably better informed compared to students in other courses of the same age and in comparison with the population who do not attend university (5). In particular, nurses play an important role on promoting public health (16).

The results show that at lower age groups (Age Class <22 years old) correspond to higher risk classes for having had unprotected sex (aOR 2.03, 95% CI 1.08-3.80). As shown by previous authors' studies it is essential to implement sexual education programs aimed at improving the knowledge in terms of STIs

Table 1. Description of the sample

Variables		N	%
Gender	Female	282	69.63
	Male	123	30.37
Contry of birth	Italy	405	100.00
	Other	0	0.00
Perceived economic status	Medium-high	111	27.41
	Low	294	72.59
Perceived health status	Medium-high	344	84.94
	Low	61	15.06
Are you engaged or single?	Engaged	217	53.58
	Single	188	46.42
Year of study	First	185	45.68
	Second	133	32.84
	Third	87	21.48
Are you a student off-site or in-site or commuter students?	In-site	163	40.25
	Commuter student	96	23.70
	Off-site	146	36.05
Sexual orientation	Heterosexual	384	94.81
	Homosexual	12	2.96
	Bisexual	9	2.22
Have you ever had sex?	No	52	12.84
	Yes, incomplete	48	11.85
	Yes, complete	305	75.31
Have you occasionally had unprotected sex (without a condom)?	No	182	51.56
	Yes	171	48.44
Do you permanently have unprotected sex (without a condom)?	No	228	67.46
	Yes	110	32.54
How would you define your knowledge of sexually transmitted diseases?	Good	183	45.19
	Poor	222	54.81
How would you define your knowledge about contraceptive methods?	Good	194	47.90
	Poor	211	52.10
Have you or have you ever had a sexually transmitted disease?	No	355	89.87
	Yes	40	10.13
Have you ever received information on sex education and/or sexually transmitted diseases?	Yes	385	95.06
	No	20	4.94

(continued)

Table 1 ***(continued)*****.** Description of the sample

Do you think you are sufficiently informed to be able to avoid risks of infection from sexually transmitted diseases?	Yes	349	86.17
	No	56	13.83
Do you know the Human Papillomavirus (HPV) vaccination?	Yes, I'm vaccinated	190	46.91
	Yes, but I'm not vaccinated	197	48.64
	No	18	4.44
Do you know that men can also undergo HPV vaccination?	Yes	327	80.74
	No	78	19.26
Do you think that the sexual information provided by the institutions (school, health, ...) is:	Good	94	23.21
	Poor	311	76.79
Age Class	≥22 years old	152	37.53
	<22 years old	253	62.47
Age Class at first sexual intercourse	≥17 years old	186	52.69
	<17 years old	167	47.31
Number of sexual partners		3.33 (SD ± 3.72)*	
Age at first sexual intercourse		16.75 (SD ± 1.77)*	
Age		21.65 (SD ± 3.24)*	

*mean (Standard Deviation)

Table 2. If you have you occasionally had unprotected sex (without a condom), Why?

	N	%
Because I use other contraceptive methods	68	45.33
For the occasional partner's choice	31	20.67
I think that is no use	10	6.67
Because we didn't have any	9	6.00
I was under the influence of drugs	8	5.33
Because I feel more pleasure without it	7	4.67
For personal choice	5	3.33
I'm embarrassed to buy condoms	4	2.67
Because I have a stable partner	3	2.00
I don't know	2	1.33
For economic reasons	2	1.33
For religious reasons	1	0.67

Table 3. Multivariable logistic regression. Adjusted Odds Ratio are presented. Each independent variable is adjusted for all the other independent variables. Based on 336 observations

		Have you occasionally had unprotected sex (without a condom)? Yes	
Independent Variables		aOR (95% CI)	*p-value*
Gender	Female	1	
	Male	1.06 (0.57-1.96)	0.848
Perceived economic status	Medium-high	1	
	Low	1.06 (0.59-1.90)	0.847
Perceived health status	Medium-high	1	
	Low	0.92 (0.45-1.89)	0.818
Are you engaged or single?	Engaged	1	
	Single	1.78 (0.70-1.98)	0.539
Year of study	First	1	
	Second	1.06 (0.60-1.87)	0.842
	Third	1.49 (0.71-3.11)	0.293
Are you a student off-site or in-site or commuter students?	In-site	1	
	Commuter student	0.90 (0.48-1.70)	0.754
	Off-site	1.03 (0.58-1.83)	0.923
Sexual orientation	Heterosexual	1	
	Homosexual	0.40 (0.09-1.69)	0.213
	Bisexual	0.32 (0.06-1.61)	0.166
Do you permanently have unprotected sex (without a condom)?	No	1	
	Yes	4.46 (2.44-8.16)	<0.001
How would you define your knowledge of sexually transmitted diseases?	Good	1	
	Poor	1.03 (0.57-1.85)	0.927
How would you define your knowledge about contraceptive methods?	Good	1	
	Poor	0.98 (0.54-1.77)	0.942
Have you or have you ever had a sexually transmitted disease?	No	1	
	Yes	0.75 (0.34-1.66)	0.471
Have you ever received information on sex education and/or sexually transmitted diseases?	Yes	1	
	No	6.02 (1.32-27.54)	0.021
Do you think you are sufficiently informed to be able to avoid risks of infection from sexually transmitted diseases?	Yes	1	
	No	0.81 (0.36-1.83)	0.617

(continued)

Table 3 *(continued)***.** Multivariable logistic regression. Adjusted Odds Ratio are presented. Each independent variable is adjusted for all the other independent variables. Based on 336 observations

Do you know the Human Papillomavirus (HPV) vaccination?	Yes, I'm vaccinated	1	
	Yes, but I'm not vaccinated	1.04 (0.60-1.80)	0.900
	No	0.26 (0.06-1.19)	0.082
Do you know that men can also undergo HPV vaccination?	Yes	1	
	No	1.63 (0.83-3.22)	0.157
Do you think that the sexual information provided by the institutions (school, health, ...) is:	Good	1	
	Poor	1.06 (0.59-1.89)	0.854
Age Class	≥22 years old	1	
	<22 years old	2.03 (1.08-3.80)	0.027
Age Class at first sexual intercourse	≥17 years old	1	
	<17 years old	1.39 (0.82-2.34)	0.222
Number of sexual partners	As the unit increase	1.18 (1.07-1.31)	0.001

and increase of sexual and reproductive health (12). To confirm this, we can report that in our study, 45.33% of the sample that occasionally had unprotected sex refers that use other contraceptive methods and 20.67% for the occasional partner's choice. These results highlight how there is still much to do in terms of information and prevention. Ultimately, the results show that the greatest risk classes for having unprotected sex belong to the part of the sample that has never received information about on sex education and/or sexually transmitted diseases (aOR 6.02, 95% CI 1.32-27.54).

Conclusions

STIs constitute a large group of infectious diseases and are an important public health issue having a strong impact in the society.

This study showed that young students are not still enough sensitized on sexually transmitted infections and preconception care. With certainty, it can be said that the number of properly trained students on the risk of inappropriate sexual behavior must grow. Voluntary initiatives such as the 3 days "Marathon of Prevention" held in Sicily thanks to the help of the Provincial Health Authority (ASP) n° 6 of Palermo, developed in the context of Hackathon Health Technology Assessment - Never Stop Learning, can be very effective in meeting basic needs young students who will work in the health system (17). In this context, the quality of information and communication, the ability to arouse interest, curiosity and the development of critical skills are crucial, especially among young people that represent a unique population on which the interest of public health researchers and policy is focused to promote sexual and reproductive health and level of knowledge.

Limits

Results cannot be generalized to all undergraduate students of the Sicilian Region since the survey was carried out at the University of Palermo. Therefore, consider that the findings represented here in should be interpreted with a degree of caution in light of certain limits of the study. In particular, it is a cross-sectional study, several independent variables could not be evaluated for the cause and effect associations. Moreover, consider that this study provides a general overview of the sexual behaviors of nurse students, which in any case, shall not be deemed as a complete and exhaustive overview and description of the sexual behaviors of all young people.

Ethical approval: This study was approved by the Ethical Committee of the University Hospital "P. Giaccone" of Palermo, Minutes No. 02/2019 (16. Studio MST3) of February 18, 2019.

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

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Original article: Interprofessional competency

Italian Validation of the Chiba Interprofessional Competency Scale (CICS29)

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Abstract. *Background and aim of the work:* The Chiba Inter-professional Competency Scale (CICS29) validated in several languages, it is a self-report instrument that investigates the degree of interprofessional collaboration in six areas: attitudes and beliefs of the professional; ability to manage a work group; actions to achieve goals; providing assistance that respects the patient; attitudes and behaviours that improve the cohesion of the working group; fulfilling or performing the own professional role. In addition to being recent, the scale investigates collaboration among all health professionals, and is not limited to specific professionals. The aim of the study was to validate the Italian version of CICS29. *Method*: A questionnaire-based study was conducted with an Italian sample consisting of 530 health professionals (419 women¸ mean age = 40 years, SD = 10.7; range 23- 58 years). The internal validity was measured using factor analysis. To verify the convergent validity, the Italian Version of Interprofessional Collaborative Competency Attainment Survey (ICCAS) was correlated with the CICS29; *Result*s: The reliability and the internal validity of the CICS29 revealed 6 factors corresponding to the original subscales. The analysis presents an excellent sample adequacy measure (KMO = .933) with the scores ranging from 0.62 to 0.78 for the interclass correlation coefficients of the 6 domains. A significant level of correlation was found between the subscales of the CICS29 and the ICCAS. *Conclusions*: In conclusion, the Italian version of CICS29 has a satisfactory level of reliability and validity and it is recommended for measuring interprofessional collaboration of the health professionals. (www.actabiomedica.it)

Key words: interprofessional collaboration, interprofessional competence, health professions, Italian validation, Chiba Inter-professional Competency Scale

Background

A relevant component of a well-functioning healthcare system is Inter-professional Collaboration (1). Integrative and synergistic interventions among professionals with different knowledge and skills are mandatory for needs of patients (2). Care management often not respect an integrative way Health care teams should improve their members' skills and share case management to provide better health services to patients and better health outcomes (3-5).

Relational skills as ability to collaborate became important to produce a better quality of care (6). Collaborative practice can be defined as a process by which the parties involved identify different aspects of a problem, constructively explore their differences and seek solutions that go beyond personal visions of what is possible (7).

Although the literature amply highlights positive effects of inter-professional collaboration on the patient's care, professionals involved and on the expected health outcomes few studies have investigated the degree of collaborative competence among health professionals (5, 8, 9, 10). Although many tools are available (9, 11) the validated scales in the Italian context are often limited to measuring the collaborative practice between doctors and nurses and no scale measuring attitudes towards collaboration has been validated in Italian until now.

Several authors (12, 13) have analysed the instruments for measuring professional collaboration, indicating the presence of different scales that measure collaborative perception, including the Collaborative Practice Scale (14) and the Collaboration and Satisfaction with Care Decision (15). However those instruments can be applicable only for specific cases, such as, for example, the intensive care units (ICUs).

There are only two instruments devoted to evaluate inter-professional skills towards collaboration. The first one is the Inter-professional Collaborative Competency Attainment Survey [ICCAS] (16). It is a self-assessment scale that investigates six subscales related to inter-professional collaborative competence: communication; collaboration; roles and responsibilities; collaboration with the patient or a family-centred approach; conflict management and resolution; team functioning. This tool has been validated in English and French and was recently translated and adapted to the Italian context (17).

The second one is the Chiba Inter-professional Competency Scale [CICS29] (18). It is a multi-dimensional self-report instrument, which specifically investigates the degree of collaborative competence among different health professionals. It consists of six specific areas: attitudes and beliefs of the professional; ability to manage a work group; actions to achieve goals; providing assistance that respects the patient; attitudes and behaviours that improve the cohesion of the working group; fulfilling or performing the own professional role. In addition to being recent, the scale has the precious advantage of investigating collaboration among all health professionals, and is not limited to the relationship between specific professional categories. This instrument is not validated in Italian language.

In light of this gap in the Italian measurement of inter-professional skills towards collaboration, the objective of this study was to validate the Italian version of the CICS29 (18), considering the factorial validity, the convergent validity and reliability (internal consistency).

As far as factorial validity is concerned, we expected that the Italian version of the scale would reflect the same structure as the original instrument. We also expected the scale to show adequate reliability (internal consistency), similar to that of the original scale.

Concerning the convergent validity, we expected a correlation among the CICS29 subscales and the measurements of a contiguous construct, already validated in Italian: the Inter -professional Collaborative Competency Attainment Survey (ICCAS; 16).

Methods

Participant Recruitment

At first we have obtained authorization for the validation by the main authors of the original study (18). Then the CICS29 scale was translated from English into Italian by a professional native-English-speaking translator and subsequently translated into Italian by a professional native-Italian-speaking translator. The translation was made by bilingual authors according to existing guidelines and back-translations were made to guarantee the maximum adherence to the original version.

The participants were contacted in the territorial and hospital contexts of Emilia Romagna region (Central-Northern Italy). The questionnaires were administered directly to each participant and, once completed, were collected by researchers. The CICS29 is meant to be a questionnaire useful on a health care population and, for this reason, no particular exclusion criteria were applied.

All participants were able to perfectly read and understand Italian and to fill out the questionnaires by themselves.

Measurements

CICS29 (18) is a self-assessment scale that investigates collaborative awareness through 29 items, measured with a 5-point Likert scale (1 = disagree; 5 = agree). The scale has six main sections (subscales): attitudes and beliefs of the professional (6 items); ability to manage a work group (5 items); actions to achieve objectives (5 items); providing assistance that respects the patient (5 items); attitudes and behaviours that improve the cohesion of the working group (4 items); fulfilling own professional role (4 items).

ICCAS (19) already validated in Italian (17) is a self-assessment instrument that investigates the interprofessional collaboration skills through 20 items, measured with a 5- point Likert scale (1 = low, 5 excellent). It has 6 dimensions: communication (5 items); collaboration (3 item); roles and responsibilities (4 items); collaboration with the patient - family-centred approach (3 items); conflict management / resolution (3 items); team operation (2 items).

In addition to The CICS29 and the ICCAS, demographic information, were collected (gender, job, type of employment, education, Operative Unit).

Data analysis

The structure of the scale was investigated through a factor analysis (principal axis; varimax rotation) using the Kaiser-Meyer-Olin (KMO) score.

The Internal consistency (reliability) of the scale was evaluated using the Cronbach's alpha coefficient and, to confirm the coherence of the scale, the inter-item correlations were evaluated. The convergent validity was evaluated by The Pearson r coefficient to highlight all the possible correlations among the CICS29 and the ICCAS subscales.

All statistical analyses were performed with the software IBM SPSS Statistics 23 for Windows.

Ethical considerations

The study has been conducted in agreement with the Ethical Principles for Medical Research Involving Human Subjects-the Declaration of Helsinki and it has been approved by the International Research Board of the University of Parma. All the Hospitals where the study took place were contacted and were asked for their availability to participate in the research. An explanatory document of the study was sent to the coordinators of the operating units in order to inform them, and to agree on the access times in the structures. All eligible participants were informed of the purpose and characteristics of the study and received a clear informative written document, explaining the design, aims, procedure and ethical considerations of the research. Informed consent was obtained before the professionals' participation. Those who signed the consent have been informed that participation in the study was voluntary and that they could have withdrawn their consent to participate at any time.

Results

530 health professionals (mean age = 40 years, DS= 10.7; range 23- 58 years), participated in the study (Table 1). Most of them were nurses (63%) working in Primary Care Unit (18.7), with a full time job (87.9%). The sample respected the gender proportion proposed in Sakai et al. (18): 16.8% of male and 83.2% of female. In our sample the proportion consisted of 111 men (20.9%) and 419 female (79.1%).

The Table 2 shows the Italian Version of CICS29, the Factor Analysis of the principal axis, the Cronbach's alpha and inter-item correlation.

The Italian version of the CICS29 showed the same structure of the original version.

The factor analysis performed on the 29 items presented an excellent sample adequacy measure (KMO=0.933). Factor analysis yielded six factors, whose real eigenvalues exceeded 0.95% of the simulated ones with respect to parallel analysis. They explain a total of 53.0% of the variance Details for each of the six factors are included below.

The attitudes and beliefs of the professional (Factor 1) was saturated by six items that affected the attitude and beliefs related to commitment and effort as a professional, compared to the ability to improve their work. The average inter-item correlation had a factor score of .48 and the internal consistency is acceptable ($\alpha = .62$).

Table 1. Demographic characteristics of respondents (n = 530)

Variable	Category	N	%
Gender	Famale	419	79.1
	Male	111	20.9
Job	Nurses	334	63
	Medical Doctors	63	11.9
	Physiotherapists	22	4.2
	Psychiatric Rehabilitation Technicians	11	2.1
	Radiology Technicians	11	2.1
	Psychologists	8	1.5
	Social Workers	8	1.5
	Biomedical Laboratory Technicians	3	0.6
	Educator	1	0.2
Operative Unit	Patient Recovery	99	18.7
	Mental Health	74	14
	Oncology	68	12.8
	Primary Care	41	7.7
	Cardiology	33	6.2
	Long-Term Care	32	6
	Obstetrics	26	9
	Medicine	25	4.7
	Surgery	24	4.5
	Nephrology,	19	3.6
	Operating Room	15	2.8
	Diagnostic Imaging	10	1.9
	Diabetology	9	1.7
	Emergency Room	9	1.7
	Physiotherapy	9	1.7
	Childhood Neuropsychiatry	7	1.3
	Radiotherapy,	6	1.1
	The Laboratory	6	1.1
	Day Hospital	6	1.1
	Health Care	5	0.9
	Resuscitation,	3	0.6
	Social Services	2	0.4
	Ophthalmology	1	0.2
	Pharmaceutical Service.	1	0.2
Type of employment	Full Time	466	87.9
	Part Time	64	12.1
Education	Graduates	204	38.5
	Bachelor's Degree	198	37.4
	Master's Degree Or Post-Graduate Specialization.	93	17.5

Table 2. Original and Italian Version of CICS29; Factorial Analysis of the principal axis, Cronbach's alpha and inter-item correlation (N= 530)

Original Version	**Italian Version**	**Factor loading**					
		1	**2**	**3**	**4**	**5**	**6**
I strive to be a professional (question 3)	Mi sforzo di fare del mio meglio come professionista (domanda 3)	.66					
I am able to apply updated expert knowledge to actual practice (question 6)	Sono in grado di applicare le conoscenze specialistiche aggiornate alla mia pratica attuale (domanda 6)	.58					
I am able to explain the basis for care to anyone (question 5)	Sono in grado di spiegare a chiunque le informazioni basilari dell'assistenza (domanda 5)	.55					
I practice evidence-based care (question 4)	Pratico un'assistenza basata sulle evidenze scientifiche (domanda 4)	.53					
I constantly strive to improve my performance (question 1)	Mi sforzo costantemente per migliorare il mio lavoro (domanda 1)	.51					
I always reflect on the care that I have provided (question 2)	Rifletto sempre sull'assistenza che ho fornito (domanda 2)	.47					
I understand the scope and limits of my team members' work (question 7)	Mi rendo conto delle capacità e dei limiti dei membri del mio gruppo di lavoro (domanda 7)		.59				
I cooperate with my team members to try to solve the problem when the team is not functioning well (question 9)	Quando il mio gruppo di lavoro non funziona bene, collaboro con i membri del gruppo per cercare di risolvere il problema (domanda 9)		.58				
I respect my team members' busy schedules and work pace (question 8)	Rispetto gli orari impegnativi e il ritmo lavorativo dei membri del mio gruppo di lavoro (domanda 8)		.52				
I know when problems within the team are likely to arise (question 11)	Mi rendo conto quando all'interno del gruppo di lavoro stanno per emergere dei problemi (domanda 11)		.51				
I reconcile conflicts among team members (question 10)	Concilio i conftitti tra i membri del gruppo di lavoro (domanda 10)		.51				
I provide necessary support to my team members depending on their professional competency (question 15)	Fornisco il supporto necessario ai membri del mio gruppo di lavoro in base alla loro competenza professionale (domanda 15)			.66			
I am able to evaluate whether the team is operating well objectively (question 16)	Sono in grado di valutare in modo obiettivo se il gruppo di lavoro sta funzionando bene (domanda 16)			.64			
I am able to explain the results of my team's initiatives (question 12)	Sono in grado di spiegare i risultati delle iniziative del mio gruppo di lavoro (domanda 12)			.61			
I am able to adjust my practices to achieve the team's objectives (question 13)	Sono in grado di adattare le mie consuetudini per raggiungere gli obiettivi del gruppo di lavoro (domanda 13)			.60			
I am able to coordinate the opinions of myself and my team members in light of the team's objective (question 14)	Sono in grado di coordinare le mie opinioni e quelle degli altri membri in base agli obiettivi del gruppo di lavoro (domanda 14)			.59			
I seek the best way to care for patients (question 21)	Cerco il miglior modo per assistere i pazienti (domanda 21)				.59		

(continued on next page)

Table 2 *(continued)***.** Original and Italian Version of CICS29; Factorial Analysis of the principal axis, Cronbach's alpha and inter-item correlation (N= 530)

Original Version	**Italian Version**	**Factor loading**					
		1	**2**	**3**	**4**	**5**	**6**
I respect not only the wishes of the patient but also those of their family (question 17)	Rispetto non solo le esigenze del paziente, ma anche quelle della sua famiglia (domanda 17)				.55		
I keep patient independence in mind when providing care (question 18)	Quando lavoro tengo presente l'autonomia del paziente (domanda 18)				.53		
I interact with patients to help them make their own decisions (question 19)	Interagisco con i pazienti per aiutarli a prendere decisioni in modo autonomo (domanda 19)				.52		
I change my manner of interacting with patients on the basis of their characteristics and situations (question 20)	Modifico il mio modo di interagire con i pazienti basandomi sulle loro caratteristiche e sulla situazione in cui si trovano (domanda 20)				.52		
I strive daily to create good interpersonal relations between professionals (question 25)	Mi sforzo quotidianamente di creare buone relazioni interpersonali fra i professionisti (domanda 25)					.60	
I try to create a suitable atmosphere during meetings wherein it is easy for other professionals to speak (question 24)	Durante le riunioni cerco di creare un'atmosfera adatta a favorire la comunicazione fra i vari professionisti (domanda 24)					.60	
I consciously create opportunities for communication with other professionals (question 22)	Creo attivamente opportunità di comunicazione con gli altri professionisti (domanda 22)					.57	
I discuss ideal patient care daily with other professionals (question 23)	Mi confronto quotidianamente con altri professionisti sull'assistenza ideale per i pazienti (domanda 23)					.57	
I fulfil my professional role as required by my team (question 27)	Adempio al mio ruolo professionale come richiesto dal mio gruppo di lavoro (domanda 27)						.67
I understand the scope of what can be accomplished by professional expertise and skills (question 28)	Capisco quanto possiamo raggiungere attraverso le nostre abilità e competenze (domanda 28)						.65
I am able to express opinions in front of other professionals on the basis of my expert knowledge (question 26)	Sono in grado di esprimere opinioni davanti ad altri professionisti sulla base della mie competenze avanzate (domanda 26)						.65
I am able to state my opinions when necessary from the viewpoint of my professional expertise, even if doing so creates friction with other professionals (question 29)	Quando necessario sono in grado di manifestare la mia opinione dal punto di vista della mia competenza professionale, anche se questo crea contrasto con altri professionisti (domanda 29)						.55
Alpha di Cronbach (Original Study)		.75	.71	.65	.73	.72	.77
Alpha di Cronbach (Italian Version)		.62	.70	.78	.77	.74	.76
Inter-item correlation		.48	.46	.48	.35	.50	.44

Factor 1: Attitudes and beliefs as a professional (*Attitudini e credenze del professionsta*); **Factor 2**: Team management skills (*Abilità di gestire un gruppo di lavoro*); **Factor 3**: Attitudes and behaviours that improve team cohesion (*Attitudini e comportamenti che migliorano la coesione del gruppo di lavoro*); **Factor 4:** Actions for accomplishing team goals (*Azioni per raggiungere gli obiettivi del gruppo di lavoro*); **Factor 5:** Providing care that respects patients (*Fornire un'assistenza che rispetta il paziente*); **Factor 6**: Fulfilling one's role as a professional (*Adempiere al proprio ruolo professionale)*.

The team management skills (Factor 2) were saturated by five items concerning the skills of the professional about collaboration and understanding the members of the working group with respect. The inter-item average correlation was .46 and has an acceptable internal consistency (α = .70).

Actions for accomplishing team goals (Factor 3) was saturated by five items that represented how much the professional was able to explain, modify, mediate both communicative and relational behaviours to achieve common objectives within the group. The factor had an acceptable internal consistency (α = .78) and inter-item consistency of .48.

Providing care that respects patients (Factor 4) was saturated with five items and concerned the ability to respect the patient's needs and improve the patient's personal autonomy. The average inter-item correlation was .35 and the internal consistency was acceptable (α = .77).

The fifth factor, attitudes and behaviours that improve team cohesion (Factor 5), was saturated by five items and concerned the belief of how much the proactive professional was committed to favouring the climate of the working group. The inter-item average correlation was .50 and it had acceptable internal consistency (α = .74).

The last factor, fulfilling one's role as a professional (F6), was saturated by four items and represented the professional's perception of the performance of his or her work. The inter-item average correlation was .44 and the internal consistency was acceptable (α = .76).

About the convergent validity (table 3), the Pearson's correlation coefficients highlighted that t on the ICCAS in almost all subscales.

For example, providing care that respects patients (CICS29) correlated in a high significant way with collaborative-patient or family-centred approach (ICCAS; r = .28).

In particular, the team management skills (CICS29) correlated in a highly significant way with communication (ICCAS; $r = .27^{**}$), roles and responsibilities (ICCAS; $r = .29^{**}$) and conflict management or resolution (ICCAS; r = $.28^{**}$)

About the actions for accomplishing team goals (CICS29) correlated in a highly significant way with communication (ICCAS; $r = .26^{**}$), collaboration (ICCAS; $r = .26^{**}$), roles and responsibilities (ICCAS; $r = .33^{**}$) and conflict management or resolution (ICCAS; $r = .27^{**}$)

Attitudes and behaviours that improve team cohesion (CICS29) correlated in a highly significant way with communication (ICCAS; $r = .25^{**}$), roles and re-

Table 3. Person correlation coefficient among the CICS29 (in column) and the ICCAS (in row) subscales

Scale	Attitudes and beliefs as a professional	Team management skills	Actions for accomplishing team goals	Providing care that respects patients	Attitudes and behaviours that improve team cohesion	Fulfilling one's role as a professional
Comunication	R=.11*	R=.27**	R=.26**	R=.19**	R=.25**	R=.29**
Collaboration	R = .08	R=.21**	R=.26**	R=.22**	R=.21**	R=.27**
Roles and responsability	R=.14**	R=.29**	R=.33**	R=.24**	R=.25**	R=.33**
Collaborative patient/ family centred approach	R=.14*	R=.22**	R=.26**	R=.28**	R=.23**	R=.27**
Conflict management/ resolution	R= .09	R=.28**	R=.27**	R=.26*	R=.27**	R=.22**
Team functioning	R=.15*	R=.24**	R=.25**	R=.18**	R=.23**	R=.25**

*p<.05, **p<.001

sponsibilities (ICCAS; *r* = .25**), conflict management or resolution (ICCAS; *r* = .27; **) and team functioning (ICCAS; *r* = .23 **).

Finally, fulfilling one's role as a professional (CICS29) correlated in a highly significant way with communication (ICCAS; *r* = .29 **), collaboration (ICCAS; *r* = .27 **), roles and responsibilities (ICCAS; *r* = .33**), collaborative-patient or family-centred approach (ICCAS; *r* = .27**), and team functioning (ICCAS; *r* = .25**).

The scale that measures the Attitudes and beliefs as a professional (CICS29) correlates less significantly with the ICCAS subscales. In particular the subscale it is not correlates with Collaboration and Conflict management/resolution of ICCAS scale and the other correlations even if significant are not so high like the other subscales.

Discussion

A good instrument to measure inter-professional collaboration should have these features: reliable, easy to understand and full, short enough to be used in a multidisciplinary context, that take into consideration not only some professional categories (e.g nurses and doctors).The CICS29 (18), since its first formulation in Japanese, has shown these characteristics and for the reason it has been translated and validated other languages. The aim of the present work was to validate the Italian version of the CICS29 (18).

Factor analysis confirmed that the Italian version of the scale has the same 6 factors as observed in the Japanese version with the same items that load on the factors of the original scale (e.g. Team management skills and Actions for accomplishing team goals).

The Internal consistency was explored by Cronbach's alpha coefficient. As Sakai et al. (18) has found the subscales of CICS29 and the total CICS29 scores showed a good reliability. In the Japanese study, the reliability of the sub-constructs varied from .66 and .77. The results achieved in our sample are very similar, with a Cronbach's alpha that varies between .62 and .78. So, in both studies, the CICS29 appears an effective instrument for assessing the degree of inter-professional competence.

The correlation between the subscales of CICS29 and the ICCAS (16) ones, that investigated the inter-professional collaborative competence, is high. These findings seem to be relevant to sustain the validity Italian version of CICS29. In fact the psychometric properties and the factorial structure are strongly supported by the statistical analysis

Two important limitations must be acknowledged. The first represented by the difficulty to find scales to test the discriminating validity. The second are the participants of the study. Although it is a polycentric study, it was carried out in a single Italian region of Central-Northern Italy. It would therefore be useful to extend the studies to other regions to ensure that the results are generalizable.

Although limitations exist, we want to underline some strengths of the study. The scale could easily be used within different wards and could provide valid assistance to knowledge development and possible interventions since the inter-professional collaboration is the best strategy for the management of complex health problems. Working together means sharing responsibilities in care, information, coordination and decisions made about the care and assistance of the patient (6). The foundation of inter-professional collaboration is first and foremost the training, which should represent a pivotal point in the study paths of health professionals, as well as in daily practice. It would also be useful to apply the scale in different departments, because in addition to the welfare aspects, a good collaboration influences various outcomes such as patient safety, access, coordination of services and the appropriate use of health resources (1-5).

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

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Original article: Patients perceptions

The nurses' uniform in pediatrics, the opinion of children and nurses

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Abstract. *Background and aim:* The nursing uniform represents a non-verbal mean of communication which in the case of children can arouse positive or negative emotions. The first study conducted on a sample of 107 children, aimed to define their preferences on different models of decorated nursing uniforms; the second one conducted on 101 nurses to understand the preferences, the meanings attributed to the uniform and their availability to adapt it according to the preferences expressed by the children. *Methods:* We conducted an observational study with a qualitative approach. For the first objective with the children, a visual stimulus was used, showing 6 models of uniform: the traditional plus 5 models of different colors and themes (cartoons characters and videogames). For the second objective with the nurses, in addition to reproducing the same visual stimulus, a semi-structured questionnaire was used. *Results:* Children and nurses seem to be in perfect accord, because in both groups, color models were the most chosen. Nurses defined their uniform with terms of particular moral, intellectual and professional value and declared themselves available to align with the preferences of the children. *Conclusions:* This study leaves little doubt about preferences; it also represents the true originality of the study because almost never in the literature have been compared the point of views of children and professionals, generally favoring the comparison between children and care givers. Our findings could represent a further landmark for guiding the choices of health organizations on currencies to be adopted in the pediatric field. (www.actabiomedica.it)

Key words: nurs uniform, pediatric nurs, child, nurs identification, uniform color

Introduction

The nursing uniform plays an important role in the perception that the public eye has of health professionals; users identify the uniform as an important factor within the role's recognition, as an element that helps create a trusting relationship between nurses and patients. The uniform can be perceived as an important means of communication (1), as a distinctive sign of professionalism (2) and capable of exuding confidence and reassurance (3); it can also contribute to the perception of the level of cleanliness, (4) which is why each health professional must always keep his uniform tidy and in perfect hygienic condition to make sure their distinctive mark couldn't simultaneously become any source of infection (5). The evolution of the nursing uniform takes its first controversial steps in the 19th century, coming from ambiguous literary characters at the time whose clothing was, for the first time, applied to a figure who "takes care" (6). The first references, specifically in the context of nursing, were based on the nuns' cassock dresses (who at the time were those assigned to the care of the sick); in fact, the first real reference in literature goes back to the deaconesses of Kaiserworth (during the first half of the nineteenth century) (7). Florence Nightingale will then be the one to define and add prestige to the nursing uniform (designed by one of her students) and to the nursing profession's reputation in general, thanks to the service rendered during the Crimean War (8). From that time until the Second World War, the nurses' uniforms would not have undergone great changes, while always, for obvious reasons, sustain an influence from the military sphere (9) and with white as the predominant color (10). Over the years, especially to comply purely to hygienic needs, the nursing uniform models lost their 'complexity' and progressively deviated from the militaristic and authoritarian connotations, to assume different shapes and colors, signs that characterize the modern and current nursing uniforms (11), increasingly distant from the conception of a single and standardized model (12). Undoubtedly, the pediatric patient represents an important communication challenge for nurses, because the outlets used to approach a child must be completely different from those used with adult patients. The uniform represents a non-verbal communication mean so, the encounter between health professionals and a child patient raises a significant amount of emotions, starting from the eye contact with the nurses' uniforms and its colors (13-14). To facilitate hospitalization, the pediatric hospital environment (furnishing, beds, walls) should be suitable for children as much as possible, including the uniforms of the health personnel, especially nurses who unfortunately often appear neutral, inexpressive and not very suitable to a pediatric environment. The fact that, for example, most nursing uniforms are white, while on one hand can be a clear sign of professionalism for adults (15), on the other hand can be a source of fear and worry for children (15-18). The traditional uniforms seem to exude different negative emotions in a child; in general, studies have in fact reported fear that can be associated with anxiety (19-21) if not even increased perception of pain levels from the treatments received (22-24). In other cases, evidence clearly shows that the uniform can act as a real communication barrier between the nurses and the children (15, 25, 26). For these reasons, in the pediatric field, what has emerged is an increasingly frequent use of nursing uniforms adapted to the children's liking and preferences (27, 28), to try to ease the contact with the patients and increase the level of collaboration. Amongst the new models used in treatment scenarios, we can observe colorful nursing uniforms (multicolored or pastel colored), with drawings or cartoon/videogames characters, others are even designed especially to be drawn on. Studies report numerous effects, almost always positive, starting with those who exhibit a significant improvement in the relationship between nurses and children through fear and discouragement decrease (14-16, 18, 26). In several other cases, the children-adapted uniforms seem to improve the perception of the children and their parents: they would seem to be able to elevate expectations (29-31), to contribute in establishing a better and more reliable professional image (16, 27) and to create a more relaxed atmosphere and environment (32). In conclusion, although the field of research on this specific topic is not so wide, the indications transposed in literature would support the use of nursing uniforms adapted to pediatric patients. It is necessary to underline that the carried out studies, make more references to the opinion of children and parents; while those that could have examined the health professionals' preferences and assess whether they concurred with the children's choices, were practically non-existent.

Objective

The study had a twofold objective: on one hand, to understand the preferences of pediatric patients about the nursing uniform, on the other hand, from the health professionals' point of view, to evaluate the importance and meaning they apply to their uniform, to verify the child-adapted uniform options available to them when recruited and lastly, to verify whether both categories concurred on the uniform style choices.

Method

Ethical implications

The Chief Medical Office of the Hospital was informed; since the study project did not include sensitive data collection to trace the participants, the consent was released. Participation was voluntary; participants (children, with the support of their parents, and nurses) were informed that any information given was strictly confidential and used exclusively for the research's purposes. The consent to participate in the study was based on the parents' acceptance to give the requested answers, while for the nurses, by returning the questionnaire once completed.

Setting

This study was conducted in northern Italy, involving several Units (most of which Pediatrics Units) of the New Children's Hospital of the Parma University Hospital.

Study 1 design

The first descriptive observational study was conducted in the period from June to November 2017.

Sample. Convenience sampling was used to select 107 children, recruited in various pediatric departments (excluding the pediatric intensive care unit), according to the following criteria of inclusion: 1) aged between 3-7 years; 2) perfectly capable of interacting, understanding and willing; 3) Italian mother tongue 4) walking children with stable conditions, therefore just requires hospitalization or ambulatory treatment (low complexity patients). It is specified that the choice of a fairly wide age range was justified by the fact that in literature, no clear association was defined between age groups and different emotional levels in relation to the colors of the nursing uniforms; for the same reason, we did not even investigate upon previous contacts with the health setting and/or health professionals (16). Since a *hic-et-nunc* opinion was required, it was finally decided not to establish a particular selection criteria regarding the length of hospitalization stay.

Procedure. The children and their parents were contacted and recruited personally by the researcher, dressed in civilian clothes with only an identification badge regarding its role in the organization. We verified the children's age with a direct question to the parent (which was not registered anyway), we then passed to the direct and manual delivery of the format containing the suggested models of nursing uniforms. We transcribed the expressed preferences on paper and later, at the end of the daily inquiries, on electronic format (Excel database). It was eventually considered appropriate to reach a sample of 107 children, based on previous studies conducted in literature on this topic (14, 16, 31).

Instrument. The survey was carried out using a self-produced research tool, consisted of a paper format with colored photos of six different nursing uniforms shown in sequence on a single sheet (A3 format on a rigid base) and numbered from 1 to 6.

The photos were created by a professional photographer, making a single "model" nurse wear 6 types of nursing scrubs, always in the same position and with the same facial expression in order to not influence the choices made (14). In one photo the nurse-model wears the scrubs which are currently worn by the nurses (totally white); the other 5 scrub styles, modified while respecting the styling of the basic model, in addition to the pastel colored backcloth (yellow, pink, blue, green and white), were instead decorated with cartoon or popular videogames characters (mainly from Walt Disney). Finally, we deliberately chose to not the model wear caps or hats of any kind to avoid to arouse fear (16) (see annex 1). The paper format was then shown to the children, with the request to choose their favorite, by pointing with their finger on one of the six photos and followed by the immediate transcription of the data.

Study 2 design

The second study, observational and descriptive, was conducted in the period from August to November 2017.

Sample. Convenience sampling was used to select 101 nurses within various Hospital Units (therefore also not specifically in the pediatrics field), without adopting any particular criteria of selection but simply questioning nurses who were immediately available. The choice not to select strictly pediatric nurses was suggested by the very nature of the survey performed, therefore to disclose the opinion of a professional group in general (rather than a part of it); however, we

Annex 1.

adopted the balance between nurses in pediatric and non-pediatric areas so to have the opportunity to make comparisons within the professional group itself.

Procedure. Professionals were contacted and recruited personally by the researcher, dressed in civilian clothes with only an identification badge regarding its role in the organization. We used the same methods of distribution (direct and manual delivery of the research tools) and data collection (transcription of the expressed preferences on paper and then on electronic format); we didn't verify the professionals' age because not helpful to the investigation.

Instruments. This second survey was carried out using two research tools. The first, used for both studies, was the format containing the suggested models of nursing uniforms (see annex 1); we simply ask the nurses to express their preferences. We then used a second tool: an *ad-hoc* structured questionnaire. In the introductory part, in addition to providing a brief presentation of the research, the processing of data was guaranteed to be in an absolutely anonymous form. With the first open-ended question, the nurses were asked to define the meaning attributed to their own uniform with three terms; the second closed-answer question (yes or no), questioned whether they would be willing to change the uniform. What was in fact asked was "Would you be willing to change the model of your uniform based on children's choices?".

Data analysis

The descriptive analysis, included the lemma qualitative analysis and the chi-square tests, useful for assessing the statistical significance of the choices made, were computed through the IBM SPSS statistical program, Statistics Version 23.0 software package (IBM Corp. 2014); *p values* <0.05 were considered statistically significant.

Results

Study 1

Sample characteristics. The sample size of the study on children and their gender characteristics are described in table 1. The final sample was made up of 107 children, of whom 58 (54.2%) males and 49 (45.8%) females.

Regarding the frequency of the choices made by the children on the proposed nursing uniform models, what was observed was that most of the preferences fell on the light blue uniform with 39 selections (36.4%), followed by the pink uniform with 21 (19.6%), green with 18 (16.8%), yellow with 15 (14.0%), white with 10 (9.3%) and lastly, the white uniform that is currently in use (without themes) selected only by 4 patients (3.7%). Considering the gender differences, a certain inhomogeneity can be observed on the choices made. The preferences expressed by females were mostly focused on the pink uniform with 18 preferences, followed by the light blue and green uniform equally with 10 preferences each, the white and yellow uniform tied with 5 preferences each and lastly, the in-use uniform with just a single preference. For the male patients, the most chosen uniform is the light blue one instead with 29 expressed preferences, then the yellow uniform with 10, the green with 8, the white with 5 and lastly the pink and the in-use uniform tied with only 3 preferences each. What can be observed is that if on one hand there is a significant divergence regarding the most chosen uniforms, which determines the significance of the aggregate data $\chi 2$ *(5; N = 107) = 22.26; p <0.01*, there definitely is a convergence in regards to the uniform that had the least number of preferences: the in-use uniform.

Study 2

Sample characteristics

The sample size of the study on nurses and their characteristics on the working areas are described in table 3. 150 questionnaires were distributed in various Units. Of these, 116 have been returned; 9 questionnaires were excluded from the sample because incomplete. The final sample was therefore made up of 101 nurses of which 49 (48.5%) from pediatric areas and 52 (51.5%) from other care areas.

The frequencies of the choices on the uniforms expressed by the nurses are summarized in table 4. In general, the preferences laid on the light blue uniform with 32 selections(31.7%) stand out; followed by pink with 22 (21.8%), green with 19 (18.8%), yellow with 14 (13.9%), then white with 10 (9.9%) and finally the in-use uniform with only 4 (4.0%) expressed preferences.

Table 1. Study 1: Sample number by gender

Gender	*N*	*%*
Males	58	54.2
Females	49	45.8
Total	107	100.0

Table 3. Study 2: nurses' working areas

Working area	N	%
Pediatric nurse	49	48.5
Not pediatric nurse	52	51.5
Total	101	100.0

Table 2. Study 1: children's frequencies expressed on nursing uniforms

Gender	White with themes	Yellow with themes	White in use	Blue with themes	Green with themes	Fuchsia with themes	Total
Males	5	10	3	29	8	3	58
Females	5	5	1	10	10	18	49
Sub Total	10 (9.3%)	15 (14.0%)	4 (3.7%)	39 (36.4%)	18 (16.8%)	21 (19.6%)	107

Table 4. Study 2: Nurses' frequencies expressed on nursing uniforms

Working area	White with themes	Yellow with themes	White in use	Blue with themes	Green with themes	Fuchsia with themes	Total
Pediatric nurse	2	8	0	8	15	16	49
Not pediatric nurse	8	6	4	24	4	6	52
Sub Total	10 (9.9%)	14 (13.9%)	4 (4%)	32 (31.7%)	19 (18.8%)	22 (21.8%)	101

In reference to the related areas, the most frequent choice of the pediatric nurses are in favor of the pink uniform with 16 preferences and secondly the green uniform with 15, just one less; next are the yellow and the light blue with 8 preferences each, a side the white one with 2 preferences and lastly, the in-use uniform that has not received any preference. Among nurses not belonging to pediatric units, the first choice, with 24 expressed preferences, is the light blue uniform; all the others that follow are below 10 preferences each: the white uniform with 8, then tied with 6 the yellow and the pink. The in-use uniform is once again in last place with 4 preferences tied with the green one. The choices between the two groups differ significantly $\chi 2$ *(5; N = 101) = 26,734; p <0.01* and substantially, as in study 1 for the children, determined by the first choices, while the presence of the in-use uniform being the last choice is emphasized in both cases. Eventually the result of the comparison between the choices carried out by the children and the nurses, does not point out statistically significant differences $\chi 2$ *(25; N = 208) = 30.575; p = 0.20.*

The answers to the question "define with three terms what your uniform means to you", are summarized in chart 1. 302 terms have been reported as a nurse has only expressed 2; by affinity some terms have been conventionally merged into lemma, depending on the most frequently reported term: "comfort"

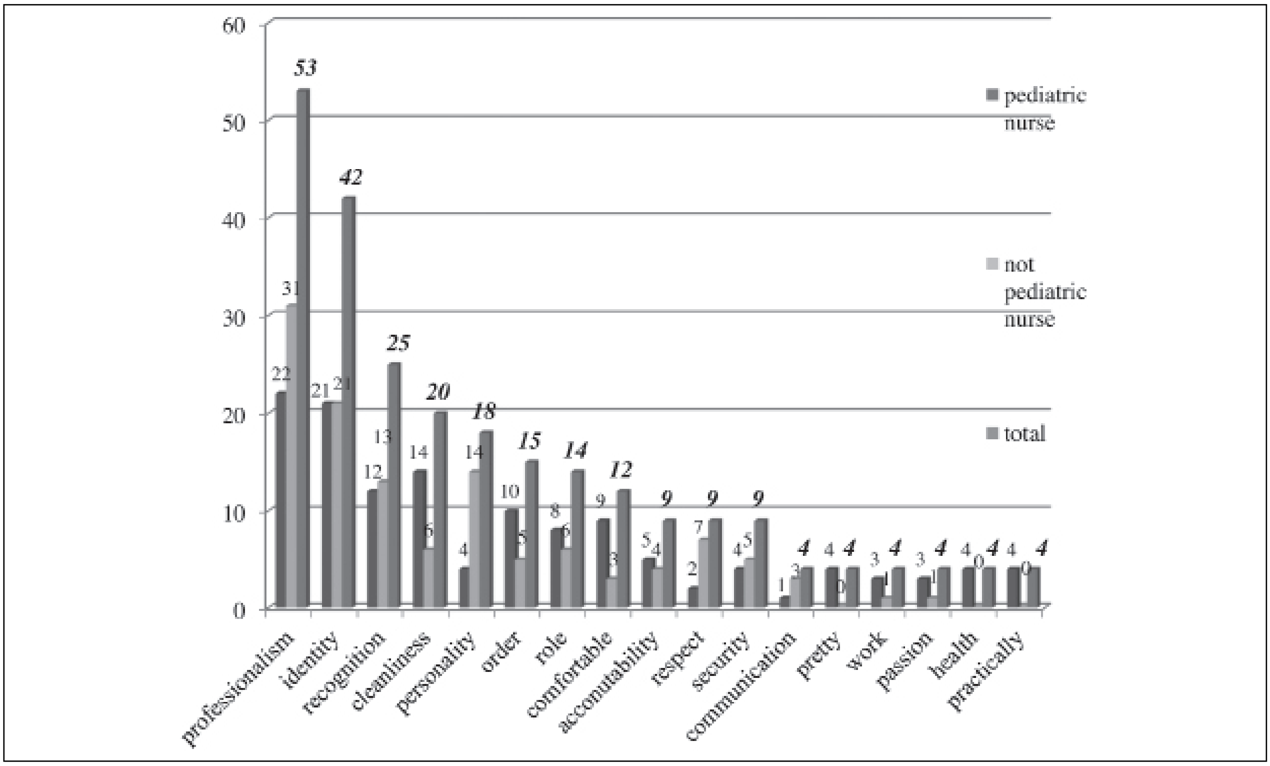

Chart 1. Study 2: Nurses' frequencies about terms to define their uniform (only if =/> 4)

Table 6. Study 2: nurses' availability to change their uniform according to children choices

Availability to change	No	Yes	Total
Pediatric nurse	1	48	49
Not pediatric nurse	4	48	52
Total	5 (5%)	96 (95%)	101

(comfortable-comfort), "identity" (identifying-identification-identitarian-identity), "order" (tidy-order), "personality" (person-personal-personality), "practicality" (practical-practicality), "cleanliness" (cleanliness-cleaning); thus 51 terms/headwords were identified. The most frequently reported is "professionalism" expressed as many as 53 times (17.5%); half of the sample in practice. Among the most mentioned there's also "identity", reported 42 times (14.0%), "recognition" (25 times, 8.3%), "cleanliness" (20 times, 6.6%), "personality" (18 times) , 5.9%), "order" (15 times 5.0%), and "role" (14 times 4.6%). To follow all the others, concluding with a substantial number of terms cited 4 times (6 terms), 3 times (4 terms), twice (10) and only once (20 terms). Considering the nurses' working areas (pediatric units or not), the differences regarding the choice of terms are statistically significant $\chi2$ *(60; N = 302) = 98.385; p <0.05.* Regarding the most cited, the term "professionalism" is the most frequently expressed both for nurses with pediatric affiliation (22, 15.0%) and not (31, 20.0%); the second most cited term is "identity" that was reported 21 times by both groups (14.3% vs 13.5%). While the third term "recognition" takes place in both groups almost on the same level with 12 (8.2%) and 13 (8.4%) citations respectively.

The answers to the question "Would you be willing to change the model of your currency based on children's choices?" are summarized in Table 6. The response shows that as many as 96 nurses (95%) express to be in favor of changing and only 5 (5%) expressed reticence, with no significant differences in reference to the working area $\chi2$ *(1; N = 101) = 1.712; p = 0.20.*

Discussion

The results produced in this study allow us to address different points of discussion. In the first study, that refers to the preferences expressed by the children, the colored and themed models are in the first places, a result that we could almost define predictable according to the literature involving the subject since the 60s and that can indeed explain the prevailing choice on uniforms with bright colors with the fact that they can stimulate positive emotions in children (38-40). Amongst the most appreciated models there is the light blue one followed by the pink one; with the other colored models as runner-ups. Very few doubts though remain on one aspect: the "classic" white uniform without themes (usually worn by nurses including the units where the study was carried out) finds very few admirers, such as the white uniform while still being themed; a fact that proves to be in line with the literature according to which the white color can exude fear in children (15). The gender differences stand out in regards to the expressed preferences, the male patients in fact express a clear preference for the light blue uniform while the pink one is the most chosen among female patients. This can be explained thanks to the broad field of research dedicated to gender stereotypes that clarify the reasons behind involuntary choices (being socially induced) in children that can influence choices even as adults (41). Another aspect though unifies the choices by gender, this being in reference to the white in-use uniform model that in both cases, was the least appreciated. For what concerns the second study (on the nurses), we also find the light blue and pink uniforms respectively in first and second place among the most chosen uniforms, this result is applicable on the children's study , but since the nurses were not asked to indicate gender, it is not possible to proceed with a specific analysis in this sense; however, aggregating the data on the expressed preferences, the two models in question, represent 53.5% of the whole sample, thus more than half. Data on the latest choices can also be applied on the first study, where the white in-use model uniform is found in last place. Among pediatric nurses, the pink and green uniforms are the most popular; what should be noted is that the in-use white uniform did not receive any preference at all, this being among the nurses who work in a pediatric unit every day. In general one of the less appreciated models is the white themed one, which further emphasizes the idiosyncrasy between the nurses and the color of the uniform that they wear every day. Among the non-pediatric nurses, the preference for the light blue uniform model prevails and, in last place, the green themed one and of course the in-use white one. What's interesting is the comparison between the preferences expressed by the two categories in the study, children and nurses, that seem in perfect harmony on basically all the expressed preferences. In fact, in both cases, there is an agreement both on the first choices, the light blue model and the pink model, and on the last converging choices regarding the in-use model. This aspect defines originality of the present study: the opinions of children and professionals have in fact almost never been compared in literature, generally favoring preferences and comparisons between children and caregivers, usually represented by parents. Nurses define the meaning attributed to their own uniform in various ways; in line with literature in fact, among the terms expressed, the preferences for 'professionalism' (2, 33-35), and 'identity' (35-37) stand out. Followed by the terms 'recognition' (that conceptually differs from 'identity' (42) and it was therefore preferred to be left by itself) 'cleanliness', 'order' and 'role'; then the remaining 46 terms/headwords. Some definitions were original and unexpected, such as 'smile', 'decorous', 'vivacity', 'cheerfulness', 'beautiful', 'graceful', 'aesthetic', all words that reflect an image of freshness and pleasantness that perhaps nurses would like their uniform to represent, and many other terms according to which each professional used to express their own interpretation of the uniform. What must be underlined is ultimately how particularly moral, intellectual and professional terms were expressed and, except in a few of cases ('suffering' and 'fatigue'), no one has reported terms expressing concepts of negativity. Continuing with the last exanimated aspects, there is almost a unanimity on the answers to the question asking to express one's willingness to change the uniform model based on the children's wishes, which judging from the answers can be interpreted as a sort of request rather than a simple expression of openness to change. If the uniform is therefore perceived in such a way by the professionals, who express their full willingness to wear a model different from the usual cliché, then we can deduce that turning towards alternative proposals, can be seen as a choice suggested by common sense, accepted and almost encouraged by both professionals and children.

Conclusions

Both studies have limitations. The choice to not define the children age groups was suggested by what was found in the literature; however, it could certainly be meant as a limit since it does not allow to investigate possible associations with the preferences on models. As for nurses it could be interesting to carry out a larger-scale investigation with a clear definition of the nurses' areas of work so as to understand if and how the amount of contact with the pediatric patients can affects the choices. A limitation for both the studies can be considered the fact that we investigated the preferences but not the emotions aroused by the nursing uniform models (and therefore on the possible associations and differences); it is a lack which, however, could represent an interesting future field of investigation. Furthermore the specific geographic setting may limit generalization of our findings.

The results show that an adapted nursing uniform, accompanied by familiar and child-friendly features, meets their unconditional approval. What's highlighted is the fact that nurses perceive their uniform as a symbol of recognition and professional identity, while associating it with distinctive, deep and important values, merged with the expression of full willingness to change this distinctive sign of their profession in accordance with the children's preferences. What seems iconic is that the in-use uniform model found very few admirers, a factor that links the children and nurses' opinions, who also stressed the importance attributed to the uniform itself. It would be appropriate and necessary to find proper solutions and strategies in order to facilitate the contact between nurses and children; an adapted nursing uniform could represent a valid solution to ensure an easier dialogue and contact, bringing the nurse closer to the child, almost like a playmate. A nurse who participated in the study told us how the simple fact of showing the paper sheet depicting the colored uniforms was enough to relax the atmosphere during her first contact with the child, who immediately requested a copy to color himself while usually, getting a simple "hi" out of them is already a challenge. This study represents a further contribution of how effective the use of a nursing uniform can be adapted based on features that children would appreciate; it is economically accessible because it doesn't involve excessive organization costs. The recognition of the uniform itself and the nurses' professional identity remains untouched and above all a child-adapted uniform can ease the approach with the children within the hospital environment, where the nurses usually represent their first reference point in the hospitalization process.

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

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