Acta Biomed 2023; Vol. 94, N. 5: e2023209 DOI: 10.23750/abm.v94i5.14526

Health coaching for undergraduate nursing students: a pilot study for an action research

Rita Romano[1], Federica Begarani[1], Elena Giovanna Bignami[2], Cristina Casubolo[1], Romina Corbara[3], Rachele La Sala[1], Pasquale La Torre[1], Giuseppe Marletta[1], Sandrino Marra[1], Michele Martelli[1], Michele Minari[1], Giulia Pelosi[1], Alfonso Sollami[1], Chiara Taffurelli[1], Antonio Pipio[2]

[1]University Teaching Hospital of Parma, Parma, Italy; [2]Department of Medicine and Surgery, University of Parma, Parma, Italy; [3]Department of Legal and Social Sciences, D'Annunzio University of Chieti/Pescara, Italy

Abstract. *Background and aim:* The Nursing undergraduate degree educational program represents an intensive and complex course, and includes a number of professionalizing practical internships, and for these reasons it requires an action to support and improve. Coaching is based on the premise that people have personal strengths and abilities which, through a interview, can be directed to solving their problems. Several studies demonstrate the efficacy of Health Coaching in different University, but never have been measured benefits regard skills improving. The objective of the study is to assess the impact of a health coaching program on the nursing students. *Method:* A pre-post quasi-experimental study was conducted, involving the activation of a Health Coaching Program for 25 nursing students selected through convenience sampling, based on their fulfillment of the inclusion criteria. The Health Coaching Program was administered by the Health Coaching Academy. *Result:* This study also evaluated parameters such as: level of concentration in study, motivation, problem solving and reorganization skills, study organization skills, psycho-physical-emotional state comprehension, decision-making skills and self-esteem, noting a statistically significant increase post-HC program. A statistically significant improvement was also found in the students' perception of their own stress management skills after the course. *Conclusion:* This study strengthens the hypothesis that HC programs contribute to improving performance of nursing students. Those conclusions need to be corroborated by future studies on the topic to further support the hypothesis that programs of HC within the learning nursing contexts can lead to a tangible benefit for students of the health professions. (www.actabiomedica.it)

Key word: nursing students, health coaching, psycho-physical-emotional state comprehension decision-making skills, self-esteem

Introduction

The Nursing undergraduate degree educational program represents an intensive and complex course, as in addition to the frontal teaching and exams it also includes a number of professionalizing practical internships, and for these reasons it requires an action to support and improve the path. The achievement of excellent performances and results in life, work and study today is in fact increasingly complex.

The strictness and complexity of nursing education can prove challenging, as the nursing student also begins clinical experience in a healthcare setting to provide patients care, the reasons why their training path could sometimes feel overwhelming.

Stress represent a reaction of our body when we are faced with external stimuli that becomes unbalanced

to the internal available resources. Stress itself is understood as an experience of tension and irritation, in which an organism reacts to physical or psychological components when a situation appears that causes fear, excitement or confusion, which can trigger manifestations of depression, tachycardia or digestive disorders (1).

Stress also can have multiple effects on professionals such as empathy decline, professionalism decrease, fatigue, illnesses, drug use, psychological distress, and suicide rates increasing (2). In a recent study conducted at the Ciudad Real University in Spain, it is highlighted that 47.92% of students enrolled in the Nursing Course indicated a moderate level of stress with an average score on the perceived stress scale (3).

The stress and critical situations managing skills are crucial, especially for a nursing student, who will have to work in environments where the rhythms are frenetic, the responsibility is great and where there may be sudden critical events to deal with. For this reason it's really important to ensure an adequate training with useful and effective tools and strategies that can help them during and after their University career. One of these is the Health Coaching (HC), used as a stress management strategy for nursing students.

Background

Health Coaching (HC) is defined in the literature as "*The art of encouraging a person's active participation in the management of their health. Coaching is based on the premise that people are resourceful with inner strengths and capabilities and involves conducting non-judgmental, solution-oriented, person-centered conversations to support people in identifying and working towards their goals*"(4).

It should be emphasized that the HC is a person-centered collaborative relationship between the health coach (adequately trained professional who has the task of developing people's potential in order to improve their psycho-physical-emotional well-being) and the coachee (client cared by the coach) involving the process of health promotion and education, aims to motivate the client to achieve personally identified health-related goals set during the coaching sessions, helps the client to analyze the options, to make choices, to plan and identify challenges and to facilitate the changing process of their health behaviors leading to disease proper management (5).

Several studies demonstrate the efficacy of HC in different University settings, from Saudi Arabia (6), to the United States of America (7-9). Some studies in the literature have examined this aspect and emerged that the HC courses included in an Academic curricula could give overall benefits to the students, but never have been measured benefits regard skills improving or its contribution in order to pass the exams.

For example, in the study conducted by Cameron et al. (9) it was highlighted how the HC program, during the 1st year of course, second semester of the Georgetown University School of Medicine Class, leds to a significant reduction in stress levels and greater awareness on its managing (9), although not emerged significant improvements in time management ($p = 0.10$) and in energy for relationships and school ($p = 0.089$). The global resilience was not different ($p = 0.186$), but significant changes were observed in control ($p = 0.029$) and spiritual influence ($p = 0.005$)(9).

In another experimental study by Aboashmat et al. (6) it was shown that the use of life coaching, with the acronym GROW (Goal, Reality, Options, Will) method appeared to be effective in reducing the psychological burden and mental health problems among dentistry students. In particular, coaching was shown to be effective in aspects of depression, stress and self-acceptance, anxiety, resilience, autonomy, environmental mastery, personal growth, positive relationships with others and life purpose. The authors recommended its use as an institutional teaching method to help dentistry students to cope with their psychological problems and to shape their educational aims. The study found that in the experimental group (compared to the control group) there were significant reductions in students' depression and stress levels and significant increases in self-acceptance levels and approach to the goal (6).

Aim

On the basis of the analysis of the literature and above all on some gaps founded in the field of quantitative research on the topic, a quasi-experimental

study was conducted in the Nursing course degree of the University of Parma aimed to assess whether a specific HC program could bring improvements to the students' learning process, through the use of tools that make the HC impact measurable.

Methods

Research questions

Does the HC intervention contribute to the positive overcoming of the nursing students' exams? Does the HC intervention improves students' perception of the following variables: motivation, organizational skills, level of concentration, problem solving skills, psycho-physical-emotional state comprehension, decision-making skills, level of self-esteem, stress management skills?

Hypothesis

H1: significant increase in the variables means: motivation, organizational skills, level of concentration, problem solving skills, psycho-physical-emotional state comprehention, decision-making skills, self-esteem level, stress management skills.

H2: significant increase in the number of successfully passed exams between the pre HC intervention and post HC intervention.

Design

It has been conducted a pre-post quasi-experimental study on a convenience sample of nursing students who followed a structured HC program.

Sample

Nursing students enrolled during their 1st academic year who have not yet passed the 4 exams of the 1st semester of the Nursing course and Nursing students enrolled during their 2nd academic year who have not passed the 3 preparatory exams for the 3rd year internships.

Procedure

The quantitative study can be divided into the following 5 phases:

- *Start-up phase*: presentation of the HC project to the nursing students sample enrolled.
- *Phase 1:* questionnaire administration to frame their situation with respect to the exams taken and whether they intend to join the project and subsequently to subscribe the consent to participate.
- *Phase 2*: introductory via web HC session lasting 45 minutes/1 hour to determine the starting point; during this session the "Wheel of Life" will be administered in the specific context of study.
- *Phase 3*: two via web HC sessions lasting 45 minutes/1 hour, adapting HC protocols based on the student's characteristics (designed by the HC Academy) and NLP (Neuro Linguistic Programming) techniques, such as anchoring (neuro stimulus-response association, learned. Anchors serve to link a functional response to a stimulus; they serve to help ourselves, or the others, to improve the mood, the time-line (the representation of the time that we make). It is a tool that deals with the organization of memories and the unconscious perception of "what will happen to us", of our expectations) (10).

Data collection

The study involves the use of the following evaluation tools:

- Wheel of Life on specific areas of the student's life: The wheel of life is a tool used in coaching that allows you to get to the heart of a person's life in just a few minutes. A pie chart is employed to visually depict the student's life segmented into wedges, representing the areas deemed most significant within the field of study. The construction of this pie chart is tailored ad-hoc for this study and draws upon the expertise of the researchers involved (11).

The student wheel, created and designed ad-hoc for nursing students, will take into consideration the student's perception of the following 8 areas:

1. Level of concentration in study.
2. Motivation.
3. Problem solving and reorganization skills (according to the difficulties they may encounter).
4. Study organization skills.
5. Psycho-physical-emotional state comprehension.
6. Decision making skills.
7. Self-esteem.
8. Stress management skills.
9. Passed exams

For each of these areas, students will have to identify their level of perception on a scale from 0 to 100.

At the end of the HC sessions, the students were asked for their overall assessment of the coaching process through a single item: "How do you overall evaluate the HC program received?" where 1 one represented the minimum score and 5 the maximum score. The number of exams passed at the end of the course was also asked.

Data analysis

Statistical Package for the Social Sciences (v. 26.0, IBM Corp. Released 2019) program was used to evaluate the data. In addition to the descriptive analyses, some tests were conducted to evaluate the significance of the differences between the pre and post values of the measured variables. To assess whether the samples were normally distributed, the Shapiro-Wilk test was used, because the sample size is less than 100 (12). For the following variables concentration, study organizational skills and stress management skills, the result was not significant ($p > .05$), therefore the distribution data is to be considered normal.

Regarding the remaining variables (motivation, problem-solving skills, comprehension of psychic-physical-relational state, decision-making skills, self-esteem, and passed exams), the Shapiro-Wilk test yielded a significant result ($p < .05$), indicating that the data distribution should be regarded as non-normal. Two types of tests therefore were used:

- Non-parametric Wilkoxon test for correlated samples, for variables whose distribution wasn't normal;
- Parametric t-test for related samples for variables in which the distribution was normal.

Results with $p<0.05$ were deemed statistically significant. In both tests the effect size was calculated, specifically through the Hedges' g indicator for normally distributions, whose magnitudes rates were: 0.01=very small; 0.20 small; 0.50=medium; 0.80=large; 1.20=very wide; 2.0=huge (13). About not normally distributions, the effect size was calculated using Kerby's r whose magnitudes rates were: 0.01=very small; 0.20 small; 0.50=medium; 0.80=large (14). Among some continuous variables, an analysis of the correlations according to the Spearman's R model was carried out, and only the significant correlations ($r > .30$) were considered (15).

Ethical consideration

It was not necessary to obtain the local Ethics Committee consent as the HC course was included as a pilot project within the study plan of the course, subject to authorization by the Study Course Council; the data collected were made anonymous and no data attributable to the student's name was found. For joining the project and collecting data, the students were asked for consent after providing adequate information about the study purpose; they voluntarily replying to the questionnaire therefore represented their consent to participate.

Results

25 students took part in the project on a voluntary basis, of which 20 (80%) were female and only 5 (20%) male, with an average age of 25 years old (minimum 19 years and maximum 53 years).

Considering the variables included in the "wheel of life", the following tables show the means measured before and after the HC sessions, with the relative differences and p values and the relative effect sizes "r" and Hedge's g.

At the end of the coaching process, the students were asked how many exams they had passed; 18 students (72%) had passed the 4 exams of the 1st semester. At the end of the course, the students were asked to evaluate the course using a Likert-type scale from 1 to 5 (1 = minimum score and 5 = maximum score). The mean of the 25 respondents was M = 4.60 (St.Dev. = .645).

By computing the correlation between the continuous variables of the wheel of life and the overall evaluation of the course made by the students, the correlations between: delta_organization and delta_understanding: r =.469 (p<.05); delta_decision-making skills and delta_self-esteem: r =.614 (p<.001); delta_stress management skills and overall evaluation of the course: r =.415 (p<.001).

Discussion

This study introduces novelties in the national and international literary scene. The first difference that can be seen with the literature examined is that this study investigates not only their stress management skills but also the level of concentration in study, motivation, problem solving skills and reorganization skills, the ability to organize of the study, the psycho-physical-emotional state comprehension, decision-making skills and self-esteem.

The hypothesis that the HC intervention produced positive outcomes is further confirmed by the size of the Hedges's g and Kerby's r effects, which are respectively from "large" to almost "enormous" for the variables with non-normal distribution and to an "average" effect for variables that are not normally distributed, giving even more value to our initial hypothesis.

Most of the studies examined furthermore, did not investigate the effectiveness of coaching, that is its impact on the improvement of the academic performance. The other novelty of our study was to demonstrate how the use of HC leads to a significant improvement in exam passing by nursing students. In fact, out of a total of 25 students who participated in the study, 72% of them (n = 18) at the end of the course had passed all the exams required for the first semester of the course with a mean of 3.6 exams passed, compared to 0 at the beginning of the route.

Unlike the study by Cameron et al (9), as already described in the data collection paragraph, this study

Table 1. Variables "wheels of life" with non-normal distribution.

	n	m	St.Dev.	Delta (POST – PRE)	p*	r
Motivation PRE	*25*	*72,60*	*19,046*	*16.88*	*.000*	*.600*
Motivation POST	*25*	*89,48*	*11,993*			
Problem solving and reorganization skills PRE	*25*	*61,00*	*16,833*	*20.60*	*.000*	*.586*
Problem solving and reorganization skills POST	*25*	*81,60*	*13,207*			
Psycho-physical-emotional state comprehension PRE	*25*	*70,60*	*24,338*	*18.92*	*.001*	*.459*
Psycho-physical-emotional state comprehension POST	*25*	*89,52*	*11,083*			
Decision making skills PRE	*25*	*62,40*	*21,656*	*16.00*	*.001*	*.480*
Decision making skills POST	*25*	*78,40*	*14,770*			
Self-esteem PRE	*25*	*60,00*	*18,930*	*20.60*	*.000*	*.571*
Self-esteem POST	*25*	*80,60*	*13,175*			
Passed exams PRE	*25*	*2,20*	*,764*	*1.4*	*.000*	*.609*
Passed exams POST	*25*	*3,60*	*,707*			

Note: (*) Non-parametric Wilkoxon test for paired samples (IC 95%); St.Dev. = Standard deviation

Table 2. Variables "wheels of life" with normal distribution.

	n	m	St.Dev.	Delta (POST – PRE)	p*	Hedges's g
Level of concentration in study PRE	*25*	*60,60*	*18,446*	*18,08*	*t(24)=7,441, p=.000*	*1.052*
Level of concentration in study POST	*25*	*78,68*	*15,633*			
Study organization skills PRE	*25*	*51,20*	*18,612*	*25.48*	*t(24)=7,684, p=.000*	*1.086*
Study organization skills POST	*25*	*76,68*	*15,855*			
Stress management skills PRE	*25*	*54,72*	*28,633*	*20.08*	*t(24)=4,616, p=.000*	*.0652*
Stress management skills POST	*25*	*74,80*	*18,901*			

Note: (*) Parametric t-test for paired samples (IC 95%); St.Dev. = Standard deviation

also evaluated other parameters such as: level of concentration in study, motivation, problem solving and reorganization skills, study organization skills, psycho-physical-emotional state comprehension, decision-making skills and self-esteem. For each item there was a statistically significant increase post-HC program (Table 1 and table 2). In our study, the students' perception of their stress management skills was also evaluated, and for this variable too there was a statistically significant improvement after the course itself with an increase of 20.08 as shown in Table 2.

As shown in Table 1 and Table 2, the pre-post HC statistical tests on the measured variables show significant differences, therefore we can admit the hypothesis that the HC intervention can produce positive results, confirmed by the Hedges's g effect size coefficient, which ranges from "large" to almost "enormous" as highlighted in Table 2 for normally distributed variables, and by Kerby's r effect size coefficient which stands for an "average" effect, (see Table 1) for the variables that that are not normally distributed. We are not aware of any studies that evaluate the effectiveness of HC interventions on passing exams, it was therefore not possible to make any comparison with the literature examined as no study found took these items into consideration or the studies carried out were of qualitative type (e.g. with focus groups) which aimed to detect only and exclusively the students' perception without properly measuring pre- and post-intervention. (8).

Last but not least it should be highlighted how the correlations have highlighted a positive significance between some variables. Among these, it is interesting to see a strong correlation between decision-making skills and self-esteem (r = .614) and, albeit with a lesser strength, between organization and comprehension (r = .469) and between stress management skills and overall evaluation of the course (r = .415). The data would seem to suggest that the HC intervention allowed students to improve decision-making skills and therefore self-esteem, improve their study organization skills and then about contents' comprehension. Finally, it seems that those who judged the course more favorably also improved their stress management skills.

Conclusions

Consistent with findings from previous studies, our project has also demonstrated a statistically significant improvement in stress management ability before and after coaching sessions, with an approximate increase of around 20%. Moreover, it has contributed to the literary landscape by considering the number of exams passed following the coaching program. Most of the studies examined, in fact, did not investigate the effectiveness of coaching in terms of its impact on academic progress or improvement in academic performance. The novelty of our study lies in demonstrating how the use of a Health Coaching Program can lead to a significant improvement in exam success rates among nursing students. Out of a total of 25 participants in the study, 72% of them (n = 18) had successfully passed all the exams required in the first semester of their course of study, with an average of 3.6 exams passed, compared to 0% at the beginning of the program. Despite the sampling limitation, this

study strengthens the hypothesis that HC programs contribute to improving the University performance of nursing students. Those conclusions need to be corroborated by future studies on the topic to further support the hypothesis that programs of HC within the learning nursing contexts can lead to a tangible benefit for students or more generally of the health professions.

Acknowledgements: The researchers appreciate the students who actively took part in this project because they trusted and relied on the Health Coaches.

Special thanks to all the Health Coaches who contributed to the realization of this project: Albertini Alberto, Avanti Martina, Baioni Federica, Batani Beatrice, Brambilla Alessandra Carola, Brunetti Davide, Cagliotti Salvatore, Catignano Aldo, Citarelli Michela, Cuneo Massimo, Dasè Miriam, D'Abronzo Marika, Di Paolo Mariangela, Di Stasio Gianluca, Droghetti Alessandra, Ferrara Giovanna, Giovannini Simone, Laureti Anna, March Chiara, Nunziata Concetta, Pieroni Lucia, Pillia Giorgia, Proietti Marco, Ricchezza Kiko.

Funding: The study did not receive any funding.

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

References

1. Cestari VRF, Barbosa IV, Florêncio RS, Pessoa VLM de P, Moreira TMM. Estresse em estudantes de enfermagem: estudo sobre vulnerabilidades sociodemográficas e acadêmicas. Acta Paul Enferm. 2017;30(2):190–6. doi: 10.1590/1982- 0194201700029.
2. Farquhar J, Kamei R, Vidyarthi A. Strategies for enhancing medical student resilience: student and faculty member perspectives. Int J Med Educ. 2018 Jan;9:1–6. doi: 10.5116 /ijme.5a46.1ccc.
3. Onieva-Zafra MD, Fernández-Muñoz JJ, Fernández-Martínez E, García-Sánchez FJ, Abreu-Sánchez A, Parra-Fernández ML. Anxiety, perceived stress and coping strategies in nursing students: a cross-sectional, correlational, descriptive study. BMC Med Educ. 2020 Dec;20(1):370-9. doi: 10.1186/s12909-020-02294-z.
4. Maini A, Fyfe M, Kumar S. Medical students as health coaches: Adding value for patients and students. BMC Med Educ. 2020 Jun;20(1):182-200. doi: 10.1186/s12909 -020-02096-3.
5. Barr JA, Tsai LP. Health coaching provided by registered nurses described: a systematic review and narrative synthesis. BMC Nurs. 2021 Dec;20(1):74-92. doi: 10.1186 /s12912-021-00594-3.
6. Aboalshamat K, Al-Zaidi D, Jawa D, Al-Harbi H, Alharbi R, Al-Otaibi S. The effect of life coaching on psychological distress among dental students: interventional study. BMC Psychol. 2020 Dec;8(1) :106-114. doi: 10.1186 /s40359-020-00475-5.
7. Nalliah RP, Ramaswamy V, Stefanac SJ. Coaching to oversee student progress in clinical and professional development. J Dent Educ. 2021 Dec;85(S3):1994–5. doi: 10.1002 /jdd.12527.
8. Wolff M, Morgan H, Jackson J, Skye E, Hammoud M, Ross PT. Academic coaching: Insights from the medical student's perspective. Med Teach. 2020 Feb;42(2):172–7. doi: 10.1080/0142159x.2019.1670341.
9. Cameron D, Dromerick LJ, Ahn J, Dromerick AW. Executive/life coaching for first year medical students: A prospective study. BMC Med Educ. 2019 May;19(1): 163-170. doi: 10.1186/s12909-019-1564-4.
10. Bandler R. Get the life you want: The secrets to quick and lasting change-'with neuro linguistic programming. Deerfield Beach, FL. Heath Communications. Florida; 2008.
11. Bavister S, Vickers A. Coaching indispensabile (Indispensable coaching). Milano:Unicomunicazione; 2018.
12. Shapiro, S. S. and Wilk MB. An analysis of variance test for normality (complete samples). Biometrika. 1965;52(3/4):591–611. http://www.jstor.org/stable/2333709
13. Maher JM, Markey JC, Ebert-May D. The other half of the story: Effect size analysis in quantitative research. CBE Life Sci Educ. 2013;12(3):345–51. doi: 10.1187 /cbe.13-04-0082.
14. Kerby DS. The Simple Difference Formula: An Approach to Teaching Nonparametric Correlation. Compr Psychol. 2014;3(1):11-21. doi: 10.2466/11.it.3.1.
15. Cohen J. Set correlation and contingency tables. Appl Psychol Meas. 1988;12(4):425–34. http://purl.umn.edu/93227.

Correspondence:
Received: 28 March 2023
Accepted: 7 July 2023
Alfonso Sollami RN, MSN, PhD
University Teaching Hospital of Parma (Italy)
Via Gramsci 14 Parma 43125 Parma (Italy)
E-mail: sollamiphd@gmail.com