Translation and application of an obesity behavior change technique training in a Spanish nursing undergraduate setting

Traducción y aplicación de un programa de cambio de conducta en obesidad, en estudiantes españoles de enfermería

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ABSTRACT

Background. The TEnT PEGS framework is a behavior change communication toolkit which has been shown to be useful in increasing health professional trainees' skills and knowledge about obesity-related behavior change techniques. There is no version of the behavioral change intervention toolkit in Spanish. Therefore, the objectives of this study were 1) to translate the TEnT PEGS framework into Spanish and apply it to a Spanish nursing student population; 2) To analyze whether training with the Spanish toolkit (DEPREMIO) had a positive impact on students' skills in encouraging obesity-related behavioral change.

Methods. First year nursing students (n=95) attended two face-to-face (2 hours per session) obesity management training sessions. A specifically designed pre-post test was carried out. Data were collected using an *ad-hoc* questionnaire of fourteen items, ten of them evaluated the student's knowledge and attitude about behavior change techniques, and four evaluated the student's perception of their skills in developing different strategies.

Results. Training significantly increased most students' knowledge and attitudes with a 0.05 level of significance and effect sizes were between 0.36 and 0.77. It also increased students' skills, although not to any significant extent.

Conclusion. The DEPREMIO toolkit helped nursing students to acquire more knowledge, attitudes and skills in obesity management. It therefore seems that this adaptation is an acceptable and feasible training tool for the Spanish nursing student population.

Keywords. Obesity. Spanish adaptation. Behavioral change technique. Nursing students.

RESUMEN

Fundamento. El programa TEnT PEGS es un conjunto de herramientas de comunicación para el cambio de comportamiento que se ha demostrado útil para aumentar las habilidades y conocimiento de los profesionales de la salud sobre técnicas de cambio de comportamiento relacionadas con la obesidad. No existe ningún manual de intervención para cambiar la conducta en español. Por lo tanto, los objetivos de este estudio fueron 1) traducir TEnT PEGS al español y aplicarlo en una población de estudiantes de enfermería españoles; 2) Analizar si este programa en español (DEPREMIO) tuvo un impacto positivo en las habilidades de los estudiantes para fomentar el cambio de comportamiento relacionado con la obesidad.

Metodología. Los estudiantes de primer año de enfermería (n = 95) asistieron a dos sesiones presenciales (2 horas por sesión) de control de la obesidad. Se utilizó un diseño pre-post. Los datos se recogieron a través de un cuestionario *ad-hoc* de catorce ítems, diez de ellos evaluaban los conocimientos y actitudes de los estudiantes sobre técnicas de cambio de conducta y cuatro evaluaban la percepción de los estudiantes sobre sus habilidades para desarrollar diferentes técnicas.

Resultados. La intervención aumentó significativamente la mayoría de los conocimientos y actitudes de los estudiantes con un nivel de significación de 0,05 y tamaños de efecto entre 0,36 y 0,77. También aumentaron las habilidades de los estudiantes, aunque no significativamente.

Conclusión. La herramienta DEPREMIO ayudó a los estudiantes de enfermería a alcanzar mayores habilidades y actitudes en el manejo de la obesidad, por lo que sería una intervención aceptable y factible para la población española de estos estudiantes.

Palabras clave. Obesidad. Adaptación española. Técnicas de cambio de comportamiento. Estudiantes de Enfermería.

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INTRODUCTION

In Europe, 63% of male and 54% of female adults are overweight or obese (body mass index >25 kg/m^2)[1]. In Spain, 54% of adults are overweight or obese, and obesity has increased from 7.4% to 17% in the last 25 years[2].

As obesity has wide ranging effects on health, many different groups of health providers find their roles increasingly related to supporting patients with behavioral changes that could reduce obesity-related illness such as diabetes, cardiovascular disease and cancer[3]. This breadth of involvement is now also formally advocated by health care organizations, for example via stipulating this within staff contracts[4], *Making Every Contact Count* (MECC) initiative[5], and including these contents in national training curricula[6].

Research has indicated, however, that raising topics like obesity and discussing behavioral change with patients is challenging for health professionals[7]. A number of reoccurring barriers exist that prevent constructive behavior change conversations from occurring, including perceived and experienced lack of time, lack of skills and knowledge to support patients, doubts around the efficacy of effort to support patients, and concerns over damaging relationships with patients[7,8]. In particular, studies have demonstrated that nurses' perception of attitudes and skills about obesity are not always positive[9-12]. Evidently, there remains an unaddressed training need to better equip health professionals with this challenge.

Existing training for health professionals in latest understanding of theory-aligned behavior change techniques (BCTs) has previously been developed[13]. BCTs often aim to improve health and quality of life covering different behavioral mechanisms to help patients change their behavior to improve their health and well-being[14]. A systematic review showed that, in medical education, BCTs have not been used to design an obesity-management intervention to help future healthcare professionals in supporting patients with obesity[15,16].

The TEnT PEGS framework is a behavior change communication toolkit which includes specific BCTs. Its main objective is enabling health professionals to have a guide to be used within conversations with patients about behavior change. It centres on encouraging professionals to select BCTs based upon patient-presented cues, thus enabling a patient-centered approach to opportunistic behavior change support[17]. This approach has been shown to be both useful in terms of increasing health professionals trainees' skills and knowledge of BCTs and has also demonstrated that its format and content is acceptable to different professional groups including health care trainees and qualified health professionals[18-21]

There is no Spanish tool based on BCTs to help health professionals or trainees to discuss behavioral change with patients; therefore, we sought to investigate the potential utility of translating the TEnT PEGS framework to a Spanish setting with health care trainees, specifically undergraduate nursing students. Previous studies show that nursing trainees' perceptions of talking to patients with obesity are not always positive[19,20]. Hence, focusing on undergraduate education could assist nurses in gaining experience and confidence to communicate effectively with obese patients at a critical early stage of their skills development.

This study therefore had two specific research aims: to translate the TEnT PEGS framework into Spanish and apply it in a Spanish nursing student population, and to analyze whether a four-hour face-to-face obesity-management session had a positive impact on students' ability to promote behavior change.

METHOD

All students in the first year of their Nursing degree in University of Miguel Hernández (Elche, Spain) attended two obesity-management sessions. Students participated as part of their standard course requirements. This cohort was selected because the year represents the time

where they undertake compulsory training in the topic of communication skills and health behavior change. All students provided written consent prior to filling in the pre- and post-training questionnaires. This research project was approved by the Committee of Ethics of the university.

The TEnT PEGS framework translated into Spanish was administered before-and-after delivery of a training intervention for nursing students.

Firstly, the TEnT PEGS toolkit was translated and adapted into the Spanish language, using a four-stage process: i) it was translated into Spanish by one member of the team (MCN); ii) the translation was reviewed, compared and discussed by three psychologists and the research team in order to create the Spanish version, DEPREMIO; iii) the final Spanish version was back-translated into English by a bilingual professional and, finally, iv) the English version of DEPREMIO was compared against TEnT PEGS by the research team in order to confirm equivalence (both conceptually and semantically) of the two versions. Figure 1 shows the overall structure of TEnT PEGS and DEPREMIO.

Secondly, two face-to-face sessions (2-hour sessions) were designed, based on an obesity-management education intervention designed by Chisholm et al[18] to provide students with obesity-related behavior change communication skills. The

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Seven groups of behavior change techniques (BCTs) illustrate different potential approaches to discussing change with patients. You can see in brackets the DEPREMIO names, and explanation of each dimension:

Tailored plans (**D**ecisiones personalizadas) *(e.g. problem solving, action planning, commitment)*
Environmental change (**E**ntorno) *(e.g. restructuring the environment, reducer exposure)*
Thoughts (**P**ensamientos) *(e.g. reframing, triggers, distraction, mis-perceptions)*
Practice and record (**R**ecordar y practicar) *(e.g. having a go, monitoring, feedback)*
Emotions (**E**mociones) *(e.g. focus on past success, praise, valued self-identify)*
Goal (**M**etas) *(e.g. graded tasks, goal setting)*
Social influences (**I**nfluencia de **O**tros) *(e.g. social comparison, identification of self as role model)*

This framework also guides *how* to tailor health advice to individual patients by selecting BCTs which related directly to patient cues.

Example 1
A patient indicates feeling overwhelmed by losing weight:

Patient: "I have tried and failed so many times to include daily walking into my routine but I can never keep it up"

The practitioner chooses to select "focus on past success" as a relevant BCT to use in their response: *Practitioner:* "So you have included walks into your routine before, on numerous occasions, what have you learnt from these attempts about what helps you to go for walks?"

Example.
A patient indicates:

Patient: "I often come in from a particularly stressful day at work and at head straight for a naughty but nice snack"

The practitioner chooses to select "identifying triggers" as a relevant BCT to use in their response: *Practitioner:* "do you think your stress triggers snacking habits? If so, can you think of another way to manage this stress?"

Example 3
A patient indicates:

Patient: "I know exercise would really improve my diabetes, I want to do it but it just never happens"

The practitioner chooses to select "problem solving" as a relevant BCT to use in their response: *Practitioner:* "What are some of the things that get in the way of that for you? Then we can look at each one to plan how to manage it if it comes up"

Figure 1. TENTPEGS framework[15] and DEPREMIO framework.

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developers/trainers were two psychologists with expertise in health behavior change and health psychology who were also part of the research team. Session 2 took place one week after session 1. The first session was delivered to all students in one group, and in session 2, students were divided into five groups (21-24 participants each). Content of the two sessions (Table 1) were related to: discussion about the abilities of health professionals in the patient's behavior change, communication skills to avoid and facilitating change, clarification and application of the communication strategies described in DEPREMIO, and group role play.

Table 1. Content of the two sessions

Sessions	Content
Session 1 (2 hrs) – Before this sessionstudents completed the knowledge questionnaire. – Participants were divided into two groups of ≈ 50 people.	– Presentation of the session objectives – "A patient resistant to change" Case for reflection – Individual Reflection: "… the last time you initiated a behavioral change, what helped you?" – Brainstorming "what makes us start a behavior change?" – Discussion: influence of the abilities of health professionals in the patients' behavior change. – Communication skills to avoid: messages based on fear, messages based on economic incentives, informative messages. – Communication skills facilitating change: presentation of the DEPREMIO framework. – Establishing the objectives for the second training session
Session 2 (2 hrs) – One week after session 1 – Participants were divided into five groups of ≈ 20 people.	– Summary of the previous session and main points addressed – Reminder of the objectives of the second session – Discussion and clarification about the communication strategies described in DEPREMIO – Work in groups of 5 people on 2 practical cases – Group role play – Discussion and feedback on the application of the strategies presented in DEPREMIO – Administration of the knowledge questionnaire after the training

Data were collected using a questionnaire of fourteen items designed by the research team and divided in two sections:

– *Knowledge* about their behavior change skills**:** ten items drew upon two studies related to communication skills[18,22], that tried to reflect different ways of communication that are usually used by health professionals when they are interacting with patients to give them advice about behavior change. Six are recognized as typically ineffective techniques (items 1, 2, 3, 5, 7 and 8), and four as effective techniques (items 4, 6, 9 and 10). They answered each item using a 4-point Likert scale (0 = not at all; 3 = a lot).

– Perceptions about their *skills* in developing develop different strategies: four specifically designed items based on two health behavior models (the theory of Planned Behavior[23] and the Social Cognitive theory[24]) that are related to self-efficacy and attitude constructs. They were answered on a scale of 10 points.

The questionnaire was in Spanish and translated for this paper (Appendix 1).

Scores were described by mean and standard deviation (SD). As data were not normally distributed, the Wilcoxon sign rank test was used to investigate pre to post education changes. Effect size was calculated with $r = Z/\sqrt{N}$ of Rosenthal[25], which identified effect size as small ($r < 0.20$), medium (0.20-0.50), or large (0.50-0.80). The SPSS program (version 24) was used to analyze data.

RESULTS

All students in the first year of their Nursing degree (n=95) from a Spanish university attended the two obesity-management education sessions and completed the 14-item outcome measures. Most of them (70.3%) were women and their mean age was 19.56 years old (SD: 4.89).

Following the training sessions, most of the scores regarding students' knowledge about their skills to promote behavior change changed significantly. Specifically, the item scores based for all six ineffective techniques (items 1, 2, 3, 5, 7 and 8) decreased significantly after the training (r ranged from 0.36 to 0.77). Although mean scores increased following training for all items that referred to effective techniques (items 4, 6, 9 and 10), only two showed statistically significant increases (items 4 and 6, small and medium effect size, respectively) (Table 2).

Item scores related to students' perceptions of skills were high at both pre and post training time points (Table 3). All four items increased, although not significantly so after training. At the end of the second session, trainees gave verbal feedback and most of them (90%) reported satisfaction with the session content and its benefit in terms of increasing both their knowledge and abilities in obesity-management techniques.

Table 2. Change in nursing students' knowledge about their behavior change skills, pre- and post-training

Strategies	Score [mean (SD)]		Wilcoxon		Effect Size (r)
	Pre	Post	Z	p	
1. Give patients reasons that cause fear of getting ill/dying death/getting worse	1.27 (1.015)	0.09 (0.294)	-6.992	0.000	0.72*
2. Tell patients about the economic benefits they will obtain	1.47 (0.932)	0.37 (0.653)	-6.710	0.000	0.69*
3. Provide statistical information about number of deaths, illnesses caused by their unhealthy behavior	1.40 (0.791)	0.20 (0.518)	-7.503	0.000	0.77*
4. Provide confidence in the possibility of change	2.71 (0.563)	20.86 (0.402)	-2.380	0.016	0.24
5. Transmit information in a strong/categorical manner	1.34 (0.820)	0.72 (0.871)	-4.452	0.000	0.46*
6. Ask patients what objectives they want to achieve	2.38 (0.671)	2.61 (0.551)	-4.190	0.012	0.43*
7. Give patients a lot of statistical information	1.24 (0.740)	0.36 (0.582)	-6.428	0.000	0.66*
8. Tell patients what their objectives are without considering their opinions	0.54 (0.633)	0.22 (0.622)	-3.471	0.001	0.36*
9. Ask patients how they see their social context	2.21 (0.683)	2.36 (0.683)	-1.426	0.154	0.15
10. Encourage positive emotions to help patients to engage in the healthy behavior.	2.78 (0.530)	2.80 (0.428)	-0.368	0.741	0.04

All scores were on a 4-point Likert scale (0 = not at all; 3 = a lot); SD: standard deviation; * : medium and large effect size by Rosenthal.

Table 3. Change in nursing students' perceptions about their skills to develop different strategies, pre- and post-training

Strategies	Score [mean (SD)]		Wilcoxon		Effect Size (r)
	Pre	Post	Z	p	
1. For me is easy to have conversations with patients to help them change behavior	7.16 (1.740)	7.25 (1.804)	-0.039	0.969	0.04
2. I have confidence in my skill to talk with patients so as to help them to change their behavior	7.11 (1.735)	7.20 (1.692)	-0.103	0.918	0.01
3. I think if I have conversations with patients, they will have more options to change behavior	7.24 (2.191)	7.64 (1.901)	-1.337	0.181	0.14
4. It is part of my professional role to have conversations with patients to help them to change behavior	8.60 (1.926)	9.06 (1.245)	-1.625	0.104	0.17

All scores were on a scale of 10 points; SD: standard deviation.

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DISCUSSION

One aim of this study was the translation and adaptation of the TEnT PEGS framework into Spanish (DEPREMIO), a tool that has been proven to be useful in increasing the confidence and competence of both health professionals and students in discussing weight management with patients[18,20,26]. There is no similar patient-centered tool in Spanish that uses different types of BCTs for behavior change conversations about obesity.

The second aim was to evaluate the efficacy of two sessions of obesity-management training in nursing students, using the DEPREMIO toolkit. This framework could be adapted to a Spanish health professional cohort of nursing students, and they reported satisfaction with the session content and structure. Moreover, findings show that the training had a positive impact on students' perception of the strategies a health professional should have available to help a patient change their behavior.

This training has increased students' knowledge and attitudes about behavior change talk, and it has helped students identify which strategies are the best ones to apply in their interactions with patients. This increased knowledge may account for engagement in behavioral change in obesity and physical exercise discussions as other research showed[27,28].

Furthermore, where students' perception of their abilities to help patients change their behavior is concerned, students scored quite high at baseline and scores increased slightly post, although this increase was not significant. As other studies have not been carried out previously in this area, further research is required to confirm that this framework may be effective to improve students' knowledge and skills in discussing obesity with patients and helping them to change their behavior. In this sense, once students already have a high perception of self-efficacy and positive attitude in obesity management, perhaps the important aspect is to keep that perception high. One recent study, carried out by Bull and Dale[29] with health and social practitioners, found that after training (teaching five BCTs) practitioners increased their confidence and competence to perform each taught BCT. Likewise, another recent study found that after applying the TEnT PEGS toolkit to different healthcare professionals, their self-efficacy and perceived behavioral control in having health conversations with service users increased[26]. Therefore, it seems that more studies focused on undergraduates are needed to test whether this toolkit would be useful for them to increase their competence in having conversation with patients.

There are some limitations in this study. Firstly, due to the lack of a control group, results do not permit any firm conclusions to be drawn about the efficacy of the training, they can instead be used to indicate the potential level of variance that could be observed in a more controlled study, and further indicate that the outcome measures selected could be feasibly administered within this setting and study design. Secondly, the time between questionnaires was one week, so it is unlikely significant changes would be expected in students' skills perceptions in this period, therefore an extension of the time period between sessions would help to achieve more insightful results. Finally, this intervention was carried out on students in their first year of their nursing degree, so they have not been able to apply the knowledge and skills acquired in clinical practice and it is not known what impact they will have on it. Hence, it will be useful to conduct follow-up studies and comparative research with nurses working in different settings (school, midwifery, primary care), to determine whether this framework can change clinical practice and increase health professional behavior change communication with overweight/obese patients and effect change on clinical outcomes such as identification of concerns, referral to relevant services and ultimately reduction in weight and obesity.

In conclusion, this study supports the idea that the DEPREMIO framework, which facilitates health psychology theory informed obesity training, is an acceptable

and feasible intervention to apply in a Spanish nurse student sample. Moreover, this study suggests that this type of intervention improves nursing students' knowledge, attitude and skills in health behavior change techniques. Thus, if this type of intervention improves student outcomes in health-related behavior change communication, it would be interesting to include this framework as a part of the Nursing degree curriculum, although further controlled studies are needed to establish confidence in these findings.

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APPENDIX 1. Translation into English of the questionnaire used to evaluate the behavior change technique training

Item	Spanish	English
Knowledge about their behavior change skills		
1	Darle razones que provoquen miedo a enfermar/morir/empeorar	Tell patients reasons that provoke fear to get sick/death risk/get worse
2	Hacerles ver el beneficio económico que obtendrán	Tell patients the economic benefits they will obtain
3	Darle información estadística sobre casos de muertes, enfermedades, etc. provocadas por la conducta poco saludable	Provide statistical information about number of deaths, illnesses caused by their unhealthy behavior
4	Proporcionar al paciente confianza sobre su posibilidad de lograr el cambio	Provide confidence on the possibility of change
5	Transmitir la información de forma rotunda	Transmit information in a strong/categorically way
6	Preguntar a los pacientes cuáles son sus objetivos para alcanzar	Ask patients what they are their objectives to achieve
7	Aportar mucha información al paciente en forma de estadísticas o datos	Give patients a lot of statistical information
8	Decir al paciente cuáles son los objetivos por alcanzar sin tener en cuenta su opinión	Tell patients what their objectives to achieve are without considering their opinions
9	Preguntar a los pacientes por cómo ve su contexto social la conducta a modificar	Ask patients how they see their social context
10	Fomentar en los pacientes emociones positivas para ayudar a realizar la conducta	Encourage positive emotions to help patients to carry out the healthy behavior
Perceptions about their skills to develop different strategies		
1	Para mí, es fácil tener conversaciones con los usuarios/pacientes para ayudarles a hacer cambios en su conducta	For me is easy to have conversations with patients to help them to behavior change
2	Tengo confianza en mí habilidad para tener conversaciones con los usuarios/pacientes para ayudarles a cambiar su conducta	I have confidence in my skill to talk with patients to help them to change their behavior
3	Creo que, si tengo conversaciones con los usuarios/pacientes, tendrán más posibilidades de cambiar su conducta	I think, if I have conversations with patients, they will have more possibilities to behavior change
4	Forma parte de mi rol tener conversaciones con los usuarios/pacientes para ayudarles a hacer cambios en su conducta	It is part of my professional role to have conversations with patients to help them to behavior change

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