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Impact of a primary care training program on the prevention and management of unhealthy alcohol use: A quasi-experimental study

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ABSTRACT

Objective: To assess the impact of a training program targeted to Primary Care (PC) professionalson the acquisition of communication skills, attitudes, and knowledge about the prevention and management of unhealthy alcohol use.
Methods: A quasi-experimental, pre- and post-intervention study was performed in PC centers of Cordoba (Spain). Family doctors, residents and nurses participated in the study. The intervention was based on a motivational interviewing training program, which consisted in a workshop on learning skills, attitudes and knowledge about the alcohol management. PC providers were videotaped with a standardized patient in order to check the clinical and communication competencies acquired. A descriptive, bivariate and multivariate analysis was carried out ($p < 0.05$).
Results: PC providers' communication skills and attitudes showed significant improvements in the variables studied ($p < 0.001$), as well as in the clinical interview evaluation parameters.
Conclusion: The present study reveals the impact of a training program targeted to PC professionals on communication skills, attitudes, and knowledge about the prevention and management of patients with unhealthy alcohol use.
Practice implications: Training activities targeted to PC providers represent a valuable strategy to improve communication skills, attitudes and knowledge of these professionals in their clinical practice.

1. Introduction

Alcohol use is a leading risk factor for global disease burden and represents one of the main preventable causes of morbidity and mortality [1]. Globally, 3.8% of female deaths and 12.2% of male deaths are attributable to alcohol use among population aged 15–49 years. Its harmful use involves a significantly increased of health care utilization [2], both at hospital and primary care (PC) level. Unhealthy alcohol use represents 15–20% of visits handled by family doctors and, subsequently, generates an increase of health cost expenses (11%) [3].

The knowledge of the effects related to the alcohol use represents a mainstay in the implementation of strategies which allow to prevent and reduce the damage associated with its use, as it is highlighted by the World Health Organization (WHO) [4]. At national level, the 1 st Conference on Prevention and Health Promotion established the main strategies for alcohol use prevention, and the recommendations for its approach, enabling the development of the screening and brief intervention, and providing specific training on managing alcohol use to health care professionals during their university and specialized education stage [5].

At present, the training intended for health care professionals regarding alcohol use management is a key tool to assess patients with unhealthy alcohol use (defined as any consumption that risks or is accompanied by a health consequence), and it is of vital

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importance to address such intervention to all professionals involved in PC [6]. Several works [7,8] highlight the positive results of training activities to identify this health issue, representing a greatly feasible tool in the PC setting. The reinforcement of such training programs addressed to health care professionals adds to the implementation of population screening, as well as to the application of intervention techniques intended for the reduction of alcohol use, which translates to a significant improvement of the care of patients with unhealthy alcohol use [9].

PC professionals' knowledge and attitude towards alcohol consumption play a decisive role in the prevention of unhealthy alcohol use. Several studies revealed low rates of training and knowledge of PC professionals addressing unhealthy alcohol use and the need to improve their attitudes towards this issue [10,11]. Experts on this matter [12] indicate that positive attitudes (such as therapeutic commitment, work satisfaction and role security) of health professionals were associated with a higher intervention activity, and, in turn, the training and support addressed to these professionals were associated with positive changes of attitude and a higher intervention activity. In this sense, previous training experiences [13] show how the training in this area could generate positive perceptions and attitudes regarding key aspects of the clinical management of professionals, contributing to the implementation of behavior changes in such professionals.

In addition, the multidisciplinary and biopsychosocial management of patients with unhealthy alcohol use requires significant communication skills by PC professional which allow to achieve an optimal physician-patient relationship [14]. Among these strategic skills, those originated from tasks based on the general principles of the motivational interview (MI) [15] play an increasingly prominent role and have proven their applicability in the reduction of harmful behavior. There are multiple risk factors and pathologies which have been approached from the MI point of view [16–19], although the most solid evidence has been recorded in the field of substance use [20]. The benefits provided by the MI regarding alcohol have been subject of study of multiple trials, including the meta-analysis performed by Lundahl et al. [21], focused on addiction, revealing that the MI is a cost-effective strategy whose effects have proven to be durable over time and superior compared with the usual treatment or the delivery of written guidelines.

Despite PC professionals consider patient-physician relationship robust enough to address alcohol use, they declare some obstacles in their daily practice, such as the lack of communication skills and the inappropriate attitudes to counsel patients effectively on lifestyle issues [22], mainly due to the lack of knowledge and previous experience in this field. Keurhorst et al. [23] reveal that the low level of knowledge, attitudes and skills of PC professionals has an impact on the clinical management of patients with unhealthy alcohol use. Therefore, an accurate training focused on these three areas would improve the prevention and management of this patients [24].

Although there is currently scientific evidence supporting the effectiveness of intervention techniques focused on patients with unhealthy alcohol use [25], there is a lack of knowledge, attitudes and communications skills among PC professionals addressing this health issue. Consequently, studies exploring the impact of training programs targeted to PC professionals with regard to these three mentioned areas are required [26–28]. Hence, it is considered relevant to test, prior to their implementation, training activities based on the MI that improve not only knowledge and attitudes of PC professionals towards prevention and management of unhealthy alcohol use, but also their communication skills.

Based on the above-mentioned premises, the aim of this study is to evaluate the effect of a training program for the acquisition of knowledge, attitudes and clinical and communicational skills based on the MI and on the recommendations intended for PC professionals to prevent and manage patients with unhealthy alcohol use.

2. Methods

A quasi-experimental, pre-post intervention, open-label, multicenter study was designed. The study population was formed by physicians in their training period (residents of Family Medicine specialty), family doctors, and nurses from the Family Medicine Teaching Unit and PC centers of the Servicio Andaluz de Salud, in the province of Cordoba (Spain). The project lasted 12 months, and the intervention was developed from April to November 2016.

The selection criteria were: 1) To be a PC professional, and 2) To give the consent to participate in the study, excluding those professionals who were experts on the matter, with prior specific training in the management of patients with unhealthy alcohol use.

As there were no prior similar studies published to determine sample size, the following premises were adopted: Using the formula to calculate the sample size for two proportions in a dependent sample (paired data) resulted in the estimation of a percentage of professionals who did not have an "acceptable" knowledge degree (equivalent to basic training received in the post-graduate period) regarding the assessment of patients with unhealthy alcohol use of 30% before the educational intervention, and of 10% after such intervention; setting a 5% alpha error (95% confidence level), a 10% beta error (90% power), for a bilateral hypothesis and considering a drop-out ratio of 5%, it was necessary to include at least 44 professionals. The sampling was performed consecutively, disseminating to all the sites in the scope of the study, offering them the possibility of participating in the training activity. Initially, 58 professionals enrolled in this study, 4 of whom discontinued the study; therefore, a final sample size of 54 subjects was obtained (Fig. 1).

3. Intervention

The training program included two activities

- In-person workshop of 10 learning hours, in groups of 12–15 participants, with a total of 4 groups. The workshop was taught by a family doctor (JAF), clinical expert in MI and in the management of alcohol use. This workshop covered the three areas approached in the objective of the study: A) Communication skills in the approach to alcohol, based on the MI [29] (directive, patient-centered counseling style for eliciting behavior change by helping patients to explore and resolve ambivalence) and reinforcement of the clinical interview to evaluate alcohol use. The following communication processes were implemented: To establish a link with the patient, to suggest and define objectives, to encourage the intrinsic motivation, and to agree on an action plan. To develop these processes, different core communication strategies were used: Encouragement of active listening, creation of self-motivation statements, completion of summaries, provision of information, and advises. B) Attitudes of PC professionals to manage patients with unhealthy alcohol use in different stages of change (Prochaska and DiClemente Model) [30], understanding attitude as the predisposition of the professional to address unhealthy alcohol use. The attitudes included in this item are: to show respect and care for the patient, to be empathic, to raise open questions, to try to identify the stage of change, to enable the patient to take a stance, to inquire about previous attempts of behavior change, to favor the agreement of objectives, and to present a follow-up plan. C) Knowledge of PC professionals about alcohol

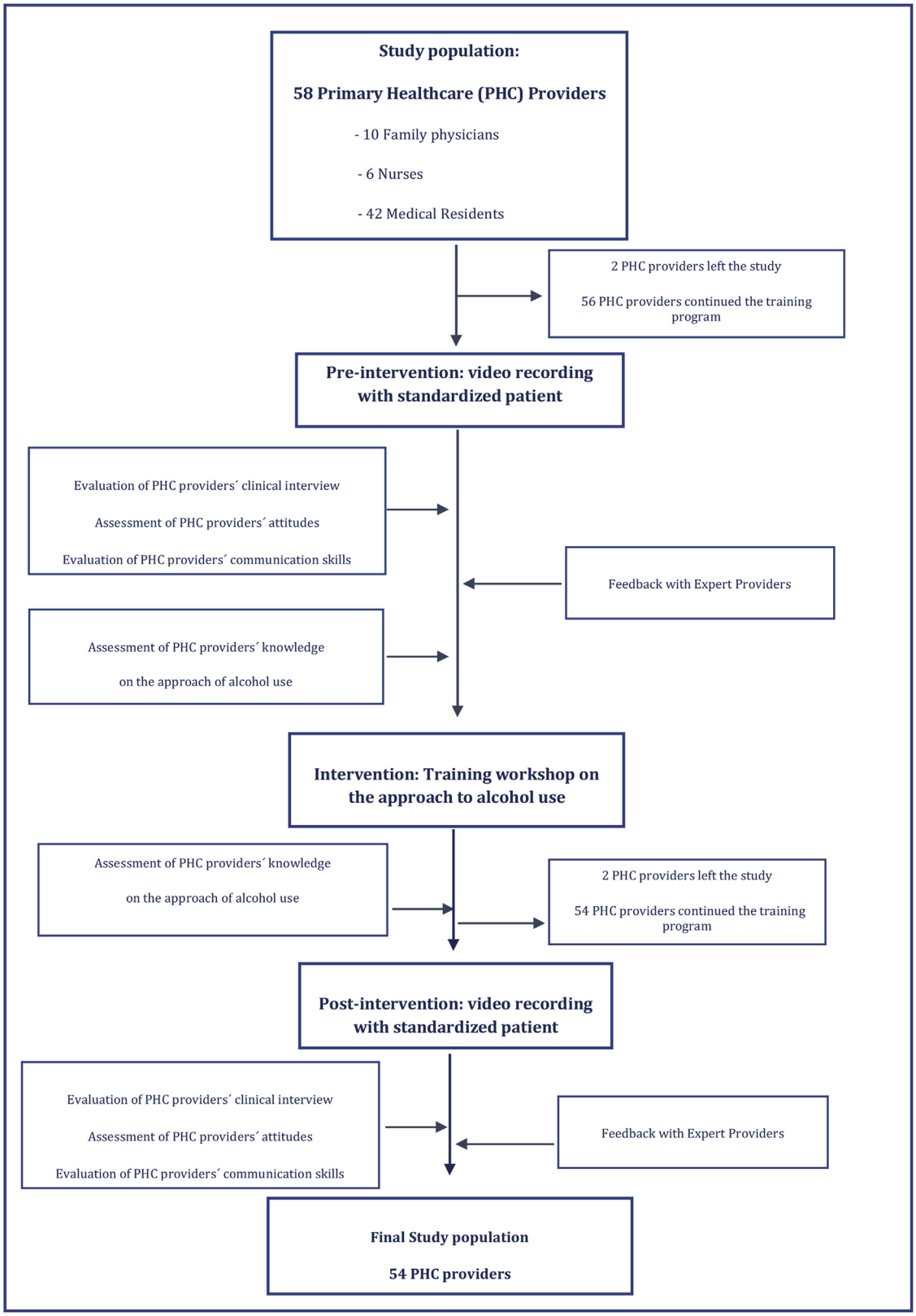

Fig. 1. General scheme of the training program.

management. It includes four items based on the PAPPS guidelines published in 2018: significance and magnitude of alcohol use, concepts related to such use, clinical management of alcohol use in the PC visit and the impact of alcohol intake on the family setting. At the beginning and completion of the workshop, each participant was given a questionnaire, which consisted in 46 questions with 6 answer options, to assess the training impact of the workshop. The questionnaire was anonymous; however, each participant was given an identification code in order to pair questionnaires for their pre-workshop comparison.

- Resolution of two clinical cases with simulated patients with unhealthy alcohol use. Before and after the development of the workshops, participants were videotaped in a standard visit with a simulated patient, previously trained. Two scripts -one for the pre-workshop visit and another for the post-workshop visit- with the actions of standardized patients were prepared by two professionals (JAF and JMP), expert physicians in the management of unhealthy alcohol use and in the MI. A week upon the beginning of the first training workshop, the simulated patients received a previous training by these experts and rehearsed their role in a videotaped visit and with the scripts prepared. The videotapes of each visit did not last more than 10 min. Subsequently, these videotaped interviews were evaluated following three grading scales created by expert physicians; each provider received an individual training feedback of 25 min duration. The first scale had 8 rating-type items and was used as an assessment tool of PC professionals´attitude of the with regard to the alcohol approach. The second scale, constituted by 10 rating-type items, evaluated the clinical interview during the health care process to be followed in case of patients with probable unhealthy alcohol use, focused on the patient and with a high content of the skills used to carry out a motivational approach, following Rollnick's and Miller's principles [31]. Both grading scales had a score from 0 to 2, where 0=nothing or scarcely; 1=acceptably or sufficiently; and 2=considerably or a lot. Finally, the feedback with each professional was completed with a third questionnaire that evaluated communication skills, which was constituted by 11 rating-type items, with a 1 to 5 score, where 1 = improvable, 2 = acceptable, 3 = medium, 4 = good, and 5 = very good. For the preparation of the three scales, the EVEM (Motivational Interview Assessment Scale) [32] questionnaire and the CICAA scale (Connect, Identify, Understand, Agree and Help) [33], which have been validated by our group, having valid content and internal consistency and intra-observer reliability, were used as reference. The CICAA scale allows to perform an external evaluation of the clinical relationship with training purposes, by observing the interaction among health care professionals, whereas the EVEM questionnaire helps to evaluate the degree of integrity of the MI.

The variables included were:

- Sociodemographic and labor variables: Age and sex, occupation (resident, family doctor or nurse), resident tutor, and time worked.
- Knowledge about prevention and management of unhealthy alcohol use: Significance and magnitude of the issue, concepts related to the alcohol use, identification of unhealthy alcohol use and impact of alcohol use on the family.

The questionnaire of the knowledge level was designed by two of the members of the research team (JAF and RRM), experts on the matter and subject to logical, apparent or consensual validity of the research team. For question selection, the document prepared by the group of experts on health education of the PAPPS [34] was considered.

- Attitudes of PC professionals towards prevention and management of alcohol use: He/she shows respect and cares for the patient, has empathy, tries to raise open questions, tries to identify the stage where the patient is, enables the patient to take a stance, inquiries about previous attempts of behavior change, favors the agreement of objectives, and presents a follow-up plan.
- Evaluation of clinical interview and communication skills (defined as the capacity of the professional to execute a communication task or activity) enabling the approach of patients with unhealthy alcohol use collected by expert physicians.

A descriptive and inferential analysis was carried out, with the implementation of relevant statistical tests in each case, both for independent samples (first plan phase), and paired samples (second phase): Chi-square test, Student *T*-test, ANOVA, or non-parametric tests, such as Wilcoxon test or the Mann-Whitney U test - upon checking the normality with the Shapiro-Wilk-test or the Spearman correlation coefficient. Finally, in order to check which covariables were associated with the level of knowledge obtained through the training program, a multiple linear regression analysis was performed. All the contrasts used were bilateral and for a $p < 0.05$ level. For the statistical analysis, SPSS V.17 and EPIDAT 3.1 programs were used.

The project was approved by the Ethics Committee of Hospital Reina Sofía (Cordoba) and authorized by Distrito Sanitario Córdoba y Guadalquivir.

4. Results

A total of 54 PC professionals were enrolled, 69.1% of whom were women. These professionals had a mean age ± SD (standard deviation) of 35.8 ± 12.86 years (range: 26–64 years old; 95% confidence interval (95% CI): 32.3–39.4), and two peaks of age (29 and 57 years) were observed. 74.1% participants were residents, 14.8% family doctors and 11.1% nurses, with an average worked time of 6.4 years (SD 9.56; range 1–30; 95% CI 3.82–9.04). 22.2% of the total were resident tutors in their PC sites (Table 1).

With regard to the knowledge about the approach of alcohol use, before and after the provision of the training workshop, significant results were obtained in the four blocks analyzed (Table 2). The overall sum of questions regarding the knowledge of professionals showed a mean score of 18.89 ± 4.67 (limits 0–46; 95% CI 17.67–20.11) questions answered correctly before the workshop and 34.31 ± 4.23 (limits 0–46; 95% CI 33.20–35.42) after the workshop. The variables associated with the level of knowledge about alcohol approach reached after the training

Table 1
Sociodemographic and labor characteristics of study participants (n = 54).

Variables	n	%	95% CI
Sex			
Male	16	30.9	17.5–41.8
Female	38	69.1	58.2–82.5
Age (years)			
Less than or equal to 35	36	66.7	54.1–79.2
36–45	3	5.5	0.6–11.7
46–55	5	9.3	1.5–17.0
56 or more	10	18.5	8.2–28.9
Type of professional			
Family doctor	8	14.8	5.3–24.3
Nursing staff	6	11.1	2.7–19.5
Resident	40	74.1	64.5–87.5
Resident tutor			
Yes	12	22.2	12.7–35.5
No	42	77.8	66.7–88.9
Time worked in Primary Care			
< 5 years	42	77.8	71.–91.8
6–15 years	4	7.4	4.0–14.4
16–25 years	4	7.4	4.0–14.4
> 25 years	4	7.4	4.0–14.4

95% CI: 95% Confidence Interval.

Table 2
Evaluation of PC professionals' knowledge before and after the training intervention.

Aspects measured	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean differences (95% CI)	p-value*
Significance and magnitude of the issue	3.15 ± 1.51	4.91 ± 1.62	1.76 (1.26–2.26)	<0.001
Concepts related to alcohol use	4.89 ± 1.97	8.18 ± 1.27	3.29 (2.77–3.82)	<0.001
Detection and management of alcohol use	8.68 ± 2.24	15.37 ± 2.00	6.69 (5.93–7.44)	<0.001
Impact of alcohol use on the family	2.34 ± 1.79	6.00 ± 1.45	3.66 (3.12– 4.19)	<0.001
Total score	18.89 ± -4.67	34.31 ± 4.23	15.42 (13.86–16.98)	<0.001

SD Standard deviation. 95% CI: 95% Confidence Interval * Wilcoxon test.

Table 3
Variables associated with the level of knowledge achieved by participants after the training intervention. Multivariate analysis.

Variables	Beta coefficient	p-value
Age	−0.472	<0.001
Sex	0.228	0.310
Occupation	0.042	0.123
Tutor	−0.409	0.773
ime worked	0.776	0.410
Pre-intervention knowledge	0.241	0.011

Dependent variable: Post-intervention knowledge. Coefficient of determination R^2 = 0.229; Overall statistics of F model = 2.739 (p = 0.030).

workshop, through multivariate analysis (Table 3), were age (p < 0.001) and level of prior knowledge (p = 0.011), when the model was adjusted by sex, occupation, being a tutor or the time worked. These variables would explain the 22.9% level of knowledge acquired by the participants after the training intervention.

The analysis of the attitudes observed in professionals, through the pre- and post-workshop videotapes, shows significant differences in all the variables established (Table 4). Considering the attitude of enabling the patient to take a stance, a mean difference of 1.11 occurred before and after the workshop (95% CI 0.91–1.31; Wilcoxon, p < 0.001). On the other hand, regarding the attitude of promoting a patient follow-up plan, a mean score of 0.81 ± 0.58 (95% CI 0.66-0.96) was obtained before the workshop, and 1.63 ± 0.48 (95% CI 1.50–1.76) was obtained after the workshop (Wilcoxon, p < 0.001).

With regard to the evaluation of the clinical interview developed by PC professionals about alcohol approach, Table 5 reveals significant differences in all the items studied. The analysis of the clinical interview, depending on sociodemographic variables, showed a direct correlation of age and time worked by PC professionals with the clinical skills analyzed before the workshop (Spearman's r = 0.31, p < 0.021 and Spearman's r = 0.32, p < 0.020, respectively). Similarly, a statistically significant relationship between the 'sex' variable and the skills detected was obtained after the workshop (ANOVA, p = 0.004). However, no significant results were obtained with regard to the occupation type (before the workshop: ANOVA, p = 0.08; after the workshop: ANOVA p = 0.44) and being a resident tutor (before the workshop: Mann Whitney, p = 0.123; after the workshop: Mann Whitney, p = 0.563).

Table 6 shows the assessment of communication skills before and after the training intervention. Significant values were found in all the skills studied. Globally, the analysis of communication skills before the workshop offered a mean score of 31.24 ± 6.11 (95% CI 29.64–32.84) and 39.82 ± 5.48 (95% CI 38.38–41.25) after the workshop performed (Wilcoxon, p < 0.001).

5. Discussion and conclusions

5.1. Discussion

The present study reveals the effect of a training program focused on PC professionals in the prevention and management of unhealthy alcohol use, showing increased knowledge and attitudes of these providers after the training program. In addition, it represents one of the few works targeted to PC professionals, which assesses clinical communication strategies aimed to address patients with unhealthy alcohol use, taking the MI as a reference [35].

One of the peculiarities of this study lies in the evaluation of PC professionals' knowledge about the approach of alcohol, before and after the provision of the training workshop. Currently, the lack of knowledge of PC professionals about the prevention and management of unhealthy alcohol use constitutes one of the weaknesses that have been identified in PC. In this regard, Johnson et al. show a low level of knowledge declared by physicians and nurses concerning the management of alcohol use [36]. Similar to other training programs developed in this field [37,38], the current study reveals an increased level of knowledge and an improvement in attitudes towards the prevention and detection of unhealthy alcohol use after the training intervention. Further studies are required to assess the impact of long-term training programs focused on the knowledge and attitudes of these professionals.

In addition, another barrier identified by health care professionals is the lack of continuous training in the PC setting [39]. Although there are several publications [40,41] focused on the effectiveness of learning programs in clinical practice, continuing training interventions to PC professionals are limited [42]. Therefore, the results obtained in this study could promote the development of continuing education programs in the prevention and identification of unhealthy alcohol use in PC.

Table 4
Analysis of PC professionals' attitudes before and after the training intervention.

Attitudes measured	Pre-interventionMean ± SD	Post-intervention Mean ± SD	Mean differences (95% CI)	p-value*
He/she shows respect and care for the patient	1.67 ± 0.48	1.91 ± 0.40	0.30 (0.06–0.42)	0.011
He/she shows empathy	0.81 ± 0.70	1.37 ± 0.68	0.56 (0.33–0.78)	<0.001
He/she tries to raise open questions	0.59 ± 0.66	1.69 ± 0.61	1.1 (0.85–1.33)	<0.001
He/she tries to identify the change stage where the patient is	0.65 ± -0.76	1.72 ± 0.53	1.07 (0.86–1.29)	<0.001
He/she enables the patient to take a stance	0.43 ± -0.63	1.54 ± 0.60	1.11 (0.91–1.31)	<0.001
He/she inquires about previous attempts of behavior modification	0.22 ± 0.50	0.69 ± 0.80	0.47 (0.26–0.67)	<0.001
He/she favors the agreement of objectives	0.74 ± 0.62	1.56 ± 0.50	0.82 (0.52–1.01)	<0.001
He/she promotes and presents a follow-up action plan	0.81 ± 0.58	1.63 ± 0.49	0.82 (0.52–1.01)	<0.001

SD Standard deviation. 95% CI: 95% Confidence Interval * Wilcoxon test.

Table 5
Analysis of the clinical interview focused on alcohol use before and after the training intervention.

Aspects evaluated	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean differences (95% CI)	p-value*
He/she asks questions about their personal background	0.87 ± 0.80	1.74 ± 0.65	0.87 (0.61–1.13)	<0.001
He/she inquires about their current treatment	0.81 ± 0.80	1.57 ± 0.74	0.76 (0.48–1.03)	<0.001
He/she asks questions about their hygiene practices	1.13 ± 0.62	1.69 ± 0.54	0.56 (0.37–0.74)	<0.001
He/she adequately asks about alcohol use	0.89 ± 0.66	1.76 ± 0.512	0.87 (0.65–1.09)	<0.001
He/she asks detailed questions about daily action	0.93 ± 0.64	1.70 ± 0.54	0.83 (0.55–1.00)	<0.001
He/she quantifies alcohol use	0.61 ± 0.71	1.72 ± 0.56	1.11 (0.86–1.36)	<0.001
He/she differentiates use on working days	0.85 ± 0.76	1.87 ± 0.39	1.02 (0.80–1.23)	<0.001
e/she inquires about their current treatment	0.94 ± 0.66	1.63 ± 0.62	0.69 (0.47–0.90)	<0.001
e/she inquires about their current treatment	0.43 ± 0.72	1.09 ± 0.96	0.66 (0.44–0.90)	<0.001
e/she inquires about their current treatment	.74 ± 0.62	1.56 ± 0.50	0.82 (0.52–1.01)	<0.001

SD Standard deviation. 95% CI: 95% Confidence Interval * Wilcoxon test.

Table 6
Differences before and after the training intervention on the communication skills in the approach of alcohol use.

Skills evaluated	Pre-intervention Mean ± SD	Post-interventionMean ± SD	Mean differences (95% CI)	p-value*
Relationship/personal support	3.17 ± 0.90	3.62 ± 0.89	0.45 (0.14–0.74)	<0.001
Active listening	0.65 ± 0.91	1.27 ± 0.71	0.62 (0.59–1.04)	<0.001
Non-directive facilitation	3.09 ± 0.84	3.79 ± 0.82	0.70 (0.51–0.89)	<0.001
Feeling approach	2.98 ± 0.86	3.74 ± 0.73	0.76 (0.57–0.95)	<0.001
Information provision	3.00 ± 0.70	3.83 ± 0.70	0.83 (0.62–1.03)	<0.001
Reaching agreements	3.00 ± 0.87	4.15 ± 0.68	1.15 (0.91–1.38)	<0.001
Participation in decision-making	3.04 ± 0.99	4.22 ± 0.86	1.18 (0.94–1.43)	<0.001
He/she uses a specific intervention technique	0.44 ± 0.60	1.15 ± 0.68	0.71 (0.49–0.92)	<0.001
He/she uses a technique to generate ambivalence	0.15 ± 0.45	1.06 ± 0.81	0.91 (0.67–1.14)	<0.001
Approach of hygienic-dietary habits	3.42 ± 0.82	4.28 ± 0.70	0.86 (0.66–1.07)	<0.001
Specific alcohol approach	3.15 ± 0.86	4.19 ± 0.75	1.04 (0.79–1.24)	<0.001
Total score	31.24 ± 6.11	39.82 ± 5.48	8.58 (7.84–10.27)	<0.001

SD Standard deviation. 95% CI: 95% Confidence Interval * Wilcoxon test.

Healthcare professionals´ attitude has a direct impact on the alcohol management in the PC setting. Anderson et al. indicate that those professionals with a positive attitude and a greater commitment in the alcohol approach are more prone to prevent and identify patients with unhealthy alcohol use [43]. Recent studies show that PC professionals´ attitude towards alcohol prevention is related to their level of training and their clinical practice [44,45]. Hence, training programs in this area are crucial to promote more positive and proactive attitudes in PC professionals.

The development of preventive healthcare strategies requires several communication skills in order to create an optimal environment, as well as an appropriate physician-patient relationship [46]. It is proven that clinical communication affects the diagnosis-therapeutic process positively [47]. This fact constitutes a key aspect in the approach of patients with unhealthy alcohol use [48]. Therefore, the training on communication skills represents one of the major challenges in the alcohol management in the PC setting [49].

In accordance with other studies [50], our results evidence a significant increase in communication competencies and an improvement of the physician-patient relationship in the approach of alcohol use derived from the training intervention [51]. Among the communication skills analyzed, promotion of active listening, qualification to reach agreements, participation in decision-making, and specific approach of alcohol use are the most developed competencies after the provision of the workshop.

The acquisition of suitable clinical interview strategies directly influences the development of a good patient-physician relationship. The importance of such relationship has been acknowledged by several studies [52], remarking that it is one of the cornerstones of the medical act. In accordance with our results, the training focused on the patient-physician relationship regarding alcohol use generates a significant improvement in all the clinical communication strategies analyzed after the development of the workshop [53,54].

Currently, the most popular intervention which has shown an impact on reducing alcohol use is MI. A meta-analysis about the topic [55] shows that the MI is effective, and there is a higher probability of success with longer follow-up periods. Copeland [56], on the other hand, highlights the importance of the MI in clinical practice, becoming one of the most promising and effective mechanisms to generate a behavior change in patients. In addition, Hettema et al. [57] note a potential synergistic effect of the MI with the implementation of feedback. However, this author emphasizes that the effect of the MI has a great variability depending on the type of professional who carries it out, the main issue concerned or the context in which it is applied.

One of the limitations of our research arises from the reduced scope of the study. Thereby, the findings described in this article need to be analyzed with caution and require subsequent studies, in order to check their reproducibility, by achieving a higher consistency and external validity. Similarly, it is necessary to consider the potential screening bias of the study, given the voluntariness of the participants, where the most motivated professionals in this matter are the most prone to collaborating, which may overestimate the training impact detected. However, it should be noted that this bias, and the observer bias -Hawthorne effect-, are difficult to be minimized in this type of interventional studies, where the internal validity is preferred over the external validity.

On the other hand, another limitation derived from the study design, lies in the duration of the workshop and the impact on alcohol use approach by professionals. Further research in this field could measure the effects arising from the provision of the training program in a longer term [58]. It has been shown that in order to acquire new competencies or change attitudes or behaviors, some time is required in addition to the use of different clinical strategies, in order to internalize it and manage to make it a standard practice for the professional. Moreover, it is necessary to consider that the intervention was developed in an experimental

setting and professionals knew they were being recorded, thereby, our results should be analyzed with caution, since the impact of the training program can not be assessed under standard clinical practice in this study. Therefore, the effect of this program to address unhealthy alcohol use under 'real-world' conditions should be analyzed.

Considering our results, there are several future research lines that should be considered. First, the implementation of our training program in other medical settings. Second, the analysis of the intervention effectiveness in terms of greater patient and provider satisfaction and better patient-physician relationship. Finally, it could also be interesting the utilization of a waitlist control group to see the effects of training for individuals who participated in the program compared to those who did not.

5.2. Conclusions

In conclusion, the present study reveals the impact of a training program targeted to PC professionals on communication skills, attitudes and knowledge about the prevention, and management of patients with unhealthy alcohol use. Additionally, the implementation of training activities addressed to PC professionals significantly improves their ability to address this type of patients, which may help increase the efficacy of their interventions in experimental conditions. Based on this study, the implementation of teaching objectives on alcohol use approach should be considered in the training plans, both in post-graduate education (being included in the Official Specialty Programs), and in the continuing medical education of PC providers.

5.3. Practice implications

Training activities targeted to PC providers represent a valuable strategy to improve the communication skills and the level of knowledge and attitudes of these professionals in their clinical practice. Further research is needed to assess whether these results are similar to providers who participate in a training program with a longer follow-up period and if it has influence in additional outcomes.

Author contributions

All authors contributed substantially to the design of the work, the acquisition and interpretation of data. Esperanza Romero and Luis Ángel Pérula searched the literature and were involved in the data collection, entry, and analysis. José Ángel Fernández, Ana Roldán, Juan Manuel Parras and Roger Ruiz developed the training program. Esperanza Romero wrote the first draft of the manuscript. All authors approved the final version. As principal investigators, Luis Ángel Perula and Esperanza Romero take responsibility for the integrity of the data and the accuracy of the data analysis.

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Ethics approval and consent to participate

The project was approved by the Ethics Committee of Hospital Reina Sofía (Cordoba) and authorized by Distrito Sanitario Córdoba y Guadalquivir. Informed consent was obtained from all individual participants included in the study. We confirm that all personal identifiers have been removed so they are not identifiable and cannot be identified through the manuscript.

Conflict of interest

All authors have indicated they have no conflicts of interest to disclose.

Declarations of interest

None.

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References

[1] World Health Organization, Global Status Report on Alcohol and Health Available at:, (2018) . https://www.who.int/substance_abuse/publications/global_alcohol_report/en/.
[2] World Health Organization, Alcohol and Primary Health Care. Basic Clinical Information for the Identification and Management of Risks and Problems Available at:, http://www.who.int/substance_abuse/publications/alcohol_atencion_primaria.pdf.
[3] J.A. Fernández García, R. Ruiz Moral, L.A. Perula de Torres, L. Campos Sánchez, N. Lora Cerezo, J. Martínez de la Iglesia, Effectiveness of medical advice to alcoholic patients and excessive drinkers treated in primary care consultations, Aten. Primaria 31 (2003) (2003) 146–153, doi:http://dx.doi.org/10.1016/S0212-6567(03)70674-X.
[4] World Health Organization, Global Strategy to Reduce the Harmful Use of Alcohol Available at:, (2010) . http://www.who.int/substance_abuse/activities/gsrhua/en/.
[5] I conference on prevention and health promotion, Aten. Primaria 40 (11) (2008) 567–569.
[6] P. Anderson, E. Kaner, M. Keurhorst, P. Bendtsen, B. Steenkiste, J. Reynolds, Attitudes and learning through practice are key to delivering brief interventions for heavy drinking in primary health care: Analyses from the odhin five country cluster randomized factorial trial, Int. J. Environ. Res. Public Health 14 (2016) 121, doi:http://dx.doi.org/10.3390/ijerph14020121.
[7] M. Keurhorst, P. Anderson, F.Spak.P. Bendsten, L. Segura, J. Colom, et al., Implementing training and support, financial reimbursement, and referral to an internet-based brief advice program to improve the early identification of hazardous and harmful alcohol consumption in primary care (ODHIN): study protocol for a cluster randomized factorial trial, Implement. Sci. 8 (2013) 11, doi:http://dx.doi.org/10.1186/1748-5908-8-11.
[8] P. Nilsen, M. Aalto, P. Bendtsen, K. Seppä, Effectiveness of strategies to implement brief alcohol intervention in primary healthcare: a systematic review, Scand. J. Prim. Health Care 24 (2006) 5–15, doi:http://dx.doi.org/10.1080/02813430500475282.
[9] M. Keurhorst, I. van de Glind, M. Bitarello do Amaral-Sabadini, P. Anderson, E. Kaner, D. Newbury-Birch, et al., Implementation strategies to enhance management of heavy alcohol consumption in primary health care: a meta-analysis, Addiction 110 (12) (2015) 1877–1900, doi:http://dx.doi.org/10.1111/add.13088.
[10] J. McNeely, P.C. Kumar, T. Rieckmann, E. Sedlander, S. Farkas, C. Chollak, et al., Barriers and facilitators affecting the implementation of substance use screening in primary care clinics: a qualitative study of patients, providers, and staff, Addict. Sci. Clin. Pract. 13 (1) (2018) 8, doi:http://dx.doi.org/10.1186/s13722-018-0110-8 Published 2018 Apr 9.
[11] M. Johnson, R. Jackson, L. Guillaume, P. Meier, E. Goyder. Barriers and facilitators to implementing screening and brief intervention for alcohol misuse: a systematic review of qualitative evidence, J. Public Health Oxf. (Oxf) 33 (3) (2011) 412–421, doi:http://dx.doi.org/10.1093/pubmed/fdq095.
[12] P. Anderson, E. Kaner, M. Keurhorst, P. Bendtsen, B. van Steenkiste, J. Reynolds, et al., Attitudes and learning through practice are key to delivering brief interventions for heavy drinking in primary health care: analyses from the

ODHIN five country cluster randomized factorial trial, Int. J. Environ. Res. Public Health 14 (2) (2017) 121, doi:http://dx.doi.org/10.3390/ijerph14020121.
[13] R. Ruiz Moral, et al., Promoting Health Promotion: perceptions of medical students about an educational program to change behaviors in primary care, Aten. Primaria (2018), doi:http://dx.doi.org/10.1016/j.aprim.2018.02.013.
[14] F. Borrell Carrió, Clinical Interview Practical Strategies Manual, semFYC ediciones, Barcelona, 2004.
[15] E. Ackerman, S.A. Falsetti, P. Lewis, A.O. Hawkins, J.A. Heinschel, Motivational interviewing: a behavioral counseling intervention for the family medicine provider, Fam. Prac. 43 (8) (2011) 582–585.
[16] D.T. Lai, K. Cahill, Y. Qin, J.L. Tang, Motivational interviewing for smoking cessation, Cochrane Database Syst. Rev. 1 (2010), doi:http://dx.doi.org/10.1002/14651858.CD006936.pub2.
[17] J. McCambridge, J. Strang, Deterioration over time in effect of motivational interviewing in reducing drug consumption and related risk among young people, Addiction. 100 (2015) 470–478, doi:http://dx.doi.org/10.1111/j.1360-0443.2005.01013.x.
[18] J. Boveda Fontan, L.A. Perula de Torres, M. Campiñez Navarro, J.M. Bosch Fontcuberta, N. Barragan Brun, J.A. Prados Castillejo, Effectiveness of motivational interviewing in patients with dyslipidemia: a randomized cluster trial, BMC Fam. Pract. 24 (16) (2015) 151, doi:http://dx.doi.org/10.1186/s12875-015-0370-2.
[19] L.A. Pérula de Torres, L. Pulido Ortega, C. Pérula de Torres, J. González Lama, I. Olaya Caro, R. Ruiz Moral, Grupo corporativo Estudio ATEM-AP, Efficacy of motivational interviewing for reducing medication errors in chronic patients over 65 years with polypharmacy: results of a cluster randomized trial, Med. Clin. (Barc) 143 (2014) 341–348, doi:http://dx.doi.org/10.1016/j.medcli.2013.07.032.
[20] J. Boveda Fontan, L.A. Perula de Torres, M. Campiñez Navarro, J.M. Bosch Fontcuberta, N. Barragan Brun, J.A. Prados Castillejo, Current evidence on the motivational interview in the approach to health care problems in primary care, Aten. Primaria 45 (2013) 486–495, doi:http://dx.doi.org/10.1016/j.aprim.2013.01.014.
[21] B. Lundahl, B.L. Burke, The effectiveness and applicability of motivational interviewing: a practice-friendly review of four meta-analyses, J. Clin. Psychol. 65 (2009) 1232–1245, doi:http://dx.doi.org/10.1002/jclp.20638.
[22] A. Beich, D. Gannik, K. Malterud, Screening and brief intervention for excessive alcohol use: qualitative interview study of the experiences of general practitioners, Br. Med. J. 325 (870) (2002).
[23] M. Keurorst, M. Heinen, J. Colom, C. Linderoth, U. Mussener, K. Okulicz-Kozaryn, et al., Strategies in primary healthcare to implement early identification of risky alcohol consumption: why do they work or not? A qualitative evaluation of the ODHIN study, BMC Fam. Pract. 17 (2016) 70.
[24] P. Anderson, M. Wojnar, A. Jakubczyk, Gual A, J. Reynolds, L. Segura, et al., Managing alcohol problems in general practice in Europe: results from the European ODHIN Survey of general practitioners, Alcohol Alcohol. 49 (2014) 531–539.
[25] E. Kaner, S. Wutzke, J. Saunders, A. Powell, J. Morawski, J. Bouix, Impact of alcohol education and training on general practitioners' diagnostic and management skills: findings from a World Health Organization collaborative study, J. Stud. Alcohol Drugs 62 (5) (2001) 621–627, doi:http://dx.doi.org/10.15288/jsa.2001.62.621.
[26] E. Britt, S.M. Hudson, N.M. Blampied, Motivational interviewing in health settings: a review, Patient Educ. Couns. 53 (2) (2004) 147–155, doi:http://dx.doi.org/10.1016/S0738-3991(03)00141-1.
[27] R. Ruiz Moral, Comunicación Clínica: Principios Y Habilidades Para La Práctica, Editorial Médica Panamericana, Madrid, 2014.
[28] E. Romero Rodríguez, L.A. Perula De Torres, A. Linares Ruiz, J.A. Fernandez Garcia, J. M. Parras Rejano, A. Roldan Villalobos, et al., Efectividad de programas formativos orientados al consumo de alcohol en atención primaria: revisión sistemática, Aten. Primaria (2018), doi:http://dx.doi.org/10.1016/j.aprim.2018.07.004.
[29] B. Lundahl, T. Moleni, B.L. Burke, R. Butters, D. Tollefson, C. Butler, S. Rollnick, Motivational interviewing in medical care settings: a systematic review and meta-analysis of randomized controlled trials, Patient Educ. Couns. 93 (2) (2013) 157–168, doi:http://dx.doi.org/10.1016/j.pec.2013.07.012.
[30] C.C. Di clemente, M.M. Velasquez, in: W.R. Miller, S. Rollnick (Eds.), Motivational Interviewing and the Stages of Change, Guilford Press, New York, 2002, pp. 201–216.
[31] W. Miller, S. Rollnick, Motivational Interviewing: Preparing People to Change Addictive Behavior, Guilford Press, New York, 1991.
[32] L.A. Pérula, M. Campiñez, J.M. Bosch, N.B. Brun, J. Arboniés, J.B. Fontán, et al., Is the Scale for Measuring Motivational Interviewing Skills a valid and reliable instrument for measuring the primary care professionals motivational skills?: EVEM study protocol, BMC Fam. Pract. 13 (2012) 112, doi:http://dx.doi.org/10.1186/1471-2296-13-112.
[33] R. Ruiz Moral, L.A. Pérula, Validez y fiabilidad de un instrumento para evaluar la comunicación clínica en las consultas: el cuestionario CICAA, Aten. Primaria 37 (2006) 320–324, doi:http://dx.doi.org/10.1157/13086707.
[34] Programa De Actividades Preventivas Y De Promoción De La Salud (PAPPS), (2018) . Available at: http://papps.es/grupos_trabajo.php.
[35] S. Rollinck, W.R. Miller, C. Butler, Motivational Interviewing in Health Care: Helping Patients Change Behavior, Guilford Press, New York, London, 2008.
[36] M. Johnson, R. Jackson, L. Guillaume, P. Meier, E. Goyder, Barriers and facilitators to implementing screening and brief intervention for alcohol misuse: a systematic review of qualitative evidence, J. Public Health (Bangkok) 33 (3) (2011) 412–421, doi:http://dx.doi.org/10.1093/pubmed/fdq095.
[37] E. Kaner, C. Lock, N. Heather, P. McNamee, S. Bond, Promoting brief alcohol intervention by nurses in primary care: a cluster randomised controlled trial, Patient Educ. Couns. 51 (2003) 277–284.
[38] P. Anderson, Effectiveness of general practice interventions for patients with harmful alcohol consumption, Br. J. Gen. Pract. 43 (1993) 386–389.
[39] A.I. Wilk, N.M. Jensen, Investigation of a brief teaching encounter using standardized patients: teaching residents alcohol screening and intervention, J. Gen. Intern. Med. 17 (2002) 356–360, doi:http://dx.doi.org/10.1046/j.1525-1497.2002.10629.x.
[40] A.M. Roche, Stubbs J.M, R.W. Sanson-Risher, J. Saunders, A controlled trial of educational strategies to teach medical students brief intervention skills for alcohol problems, Prev. Med. 26 (1997) 78–85, doi:http://dx.doi.org/10.1006/pmed.1996.9990.
[41] R. Ruiz Moral, M. Muñoz Alamo, M. Alba Jurado, L. Pérula de Torres, Effectiveness of a learner-centered training programme for primary care physicians in using a patient centred consultation style, Fam. Pract. 18 (2001) 60–63, doi:http://dx.doi.org/10.1093/fampra/18.1.60.
[42] P. Anderson, E. Kaner, S. Wutzke, M. Wensing, R. Grol, N. Heather, et al., Attitudes and management of alcohol problems in general practice: descriptive analysis based on findings of a World Health Organization international collaborative survey, Alcohol Alcohol. 38 (6) (2003) 597–601, doi:http://dx.doi.org/10.1093/alcalc/agg119.
[43] M. Keurhorst, I. van de Glind, M.Bitarellodo Amaral-Sabadini, M.P. Anderson, E. Kaner, D. Newbury-Birch, et al., Determinants of successful implementation of screening and brief interventions for hazardous and harmful alcohol consumption in primary healthcare. A systematic review and meta-regression analysis, Addiction. 110 (2015) 877–900.
[44] R.C. Van-der Hofstadt, F. Navarro Cremades, Las habilidades de comunicación como elemento básico en la formación del médico, SEMERGEN. 30 (2004) 552–556, doi:http://dx.doi.org/10.1016/S1138-3593(04)74369-5.
[45] R. Ruiz Moral, Clinical communication training programs: a review of their effectiveness in the context of medical education, Educ Med. 6 (4) (2003) 159–167.
[46] P. Nilsen, M. Aalto, P. Bendtsen, K. Seppa, Effectiveness of strategies to implement brief alcohol intervention in primary healthcare. A systematic review, Scand. J. Prim. Health Care 24 (1) (2006) 5–15, doi:http://dx.doi.org/10.1080/02813430500475282.
[47] J.P. Seale, S. Shellenberger, J.M. Boltri, I. Okosun, B. Barton, Effects of screening and brief intervention training on resident and faculty alcohol intervention behaviours: a pre- post-intervention assessment, BMC Fam. Pract. 6 (2005) 46, doi:http://dx.doi.org/10.1186/1471-2296-6-46.
[48] R.L. Richmond, K. G-Novak, L. Kehoe, G. Calfas, C.P. Mendelsohn, A. Wodak, Effect of training on general practitioners' use of a brief intervention for excessive drinkers, Aust. N. Z. J. Public Health 22 (1998) (1998) 206–209.
[49] M. Berkhof, H. van Rijssen, A. Schellart, J. Anema, A. van der Beek, Effective training strategies for teaching communication skills to physicians: an overview of systematic reviews, Patient Educ. Couns. 84 (2011) 152–162, doi:http://dx.doi.org/10.1016/j.pec.2010.06.010.
[50] I. Hernández-Torres, M. Fernández-Ortega, A. Irigoyen-Coria, M. Hernández Hernández, Importance of doctor-patient communication in family medicine, Arch Med Fam. 8 (2) (2006) 137–143.
[51] J. Noordman, T. van der Weijden, S. van Dulmen, Communication-related behavior change techniques used in face-to-face lifestyle interventions in primary care: a systematic review of the literature, Patient Educ Counseling 89 (2012) 227–244, doi:http://dx.doi.org/10.1016/j.pec.2012.07.006.
[52] E. Gavilán, L.A. Perula de Torres, R. Ruiz Moral, Assessment of the clinical relationship centered on the patient: analysis of the psychometric properties of the CICAA Scale, Aten. Primaria 42 (2010) 162–168, doi:http://dx.doi.org/10.1016/j.aprim.2009.07.005.
[53] M. Alamo, R. Ruiz Moral, L.A. Pérula de Torres, Evaluation of a patient-centred approach in generalized musculoskeletal chronic pain/fibromyalgia patients in primary care, Patient Educ. Couns. 48 (1) (2002) 23–31.
[54] R.M. Epstein, P. Franks, K. Fiscella, C.G. Shields, S.C. Meldrum, R.L. Kravitz, et al., Measuring patient-centered communication in patient-physician consultations: theoretical and practical issues, Soc. Sci. Med. 61 (2005) 1516–1528.
[55] E. Vasilaki, S.G. Hosier, W.M. Cox, The efficacy of motivational interviewing as a brief intervention for excessive drinking: a meta-analytic review, Alcohol Alcohol. 41 (3) (2006) 328–335.
[56] L. Copeland, R. McNamara, M. Kelson, S. Simpson, Mechanisms of change within motivational interviewing in relation to health behaviors outcomes: a systematic review, Patient Educ. Couns. 98 (2015) 401–411.
[57] J. Hettema, J. Steele, W.R. Miller, Motivational interviewing, Annu Rev Clinic Psychol. 1 (2005) 91–111 doi:10.1146/annurev.clinpsy.1.102803.143833.
[58] E. Kaner, Lock C, B. McAvoy, N. Heather, E. Gilvarry, A RCT of three training and support strategies to encourage implementation of screening and brief alcohol intervention by general practitioners, Br. J. Gen. Pract. 49 (1999) 699–703.