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Perceptions on smoking cessation counselling competency among Malaysian pharmacy undergraduates: A preliminary study

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Abstract

Background: There is a paucity of literature pertaining to smoking cessation counselling among Malaysian pharmacy students.

Aims: To assess pharmacy students' perceptions from a private institution on their smoking cessation counselling competency. The relationships between constructs, namely self-efficacy, attitude, perceived ideal roles of pharmacists pertaining to smoking cessation counselling, practice activities and knowledge were also explored. The role of prior exposure to tobacco-related topics for selected constructs was determined. Lastly, students' actual involvement in activities pertaining to provision of smoking cessation counselling was determined.

Methods: A cross-sectional survey was conducted whereby a 69-item questionnaire was administered to 140 pharmacy undergraduates to assess their perceptions on smoking cessation counselling competency which included self-efficacy, attitude, ideal role of pharmacists in providing smoking cessation counselling, knowledge and practice activities. Descriptive statistics, standard deviations and bivariate correlations were determined for all the constructs. The odds ratio were calculated to examine the relationships between the practice activities with other constructs. The mean differences, *t*-values, were determined to understand the role of prior exposure to tobacco-related topics for the selected constructs. The actual number and percentage of students' involvement in activities related to smoking cessation counselling by their year of study were tabulated.

Results: A total of 137 students responded, of whom 77 from the final year and the remaining 60 from the third year. Generally, low scores were obtained for practice activities and knowledge. Self-efficacy and ideal role perceptions were significantly associated with the practice activities included in the questionnaire. The final year students, who had prior exposure to tobacco-related topics had significantly higher self-efficacy for smoking cessation counselling competency.

Conclusion: The low level of knowledge among the participants necessitates further training. Students with a minimal, approximately two-hour prior exposure to tobacco-related topics, demonstrated significantly higher self-efficacy. An implication of this study is that tobacco-related curricula focussing on smoking cessation counselling would be of value to future pharmacists in terms of their perceived competency as well as actual provision of smoking cessation counselling.

Keywords: *Competency, Malaysian Pharmacy Students, Practice, Perception, Self-Efficacy, Smoking Cessation Counselling*

Introduction

Smoking causes the estimated premature death of over five million people annually (U.S. Department of Health and Human Services, 2014) including 20,000 Malaysians (Randhawa, 2015). Therefore, relevant organisations advocate that all healthcare students should receive some education in the treatment of tobacco use and dependence during their professional training years (Warren *et al.*, 2013). Training deficiency in smoking cessation counselling resulted in the lack of necessary knowledge and skill among pharmacy students (Hudmon *et al.*, 2005).

The primary role of higher education institutions is to provide their undergraduates with specific skills and knowledge to produce competent professionals to meet the demands of the competitive market. In a broad sense, competency encompasses task-related knowledge, attitudes, skill and ability (Centers for Disease Control & Prevention, 2012). Practice approximates the actual competency. In the context of smoking cessation counselling, pharmacists' perceptions on ideal pharmacists' roles in providing counselling were also found to be significantly associated with their practice (Ashley *et al.*, 2006), in addition to their self-efficacy,

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attitude and knowledge pertaining to smoking cessation counselling (Hudmon *et al*., 2003; Brewster *et al*., 2005a; Meshack *et al*., 2009). Self-efficacy is defined as an individual's own perception of one's ability or skill (Bandura, 1993).

There is a paucity of literature exploring issues pertaining to smoking cessation counselling among Malaysian pharmacy undergraduates. The main objective of this study was to assess pharmacy students' perceptions on smoking cessation counselling competency in a private institution in Malaysia. Besides, the relationship among the constructs and also associations between practice activities which approximate the actual competency, and other related constructs which were reported to influence the practice were explored in this study. Since training deficiency in smoking cessation counselling was associated with lower self-efficacy among pharmacy students, the role of prior exposure to tobacco-related topics was also determined for selected constructs in this study by including students from two different batches, one with formal prior exposure and the other batch without prior exposure. The actual number and percentage of students' involvement in activities related to smoking cessation counselling by their year of study were also determined.

Methods

A cross-sectional survey was conducted. We developed a questionnaire to assess students' perception on smoking cessation counselling competency by measuring their self-efficacy, attitudes, perceptions on ideal pharmacists' roles and practice related to providing smoking cessation counselling, as well as knowledge. A 69-item questionnaire was developed based on the literature review of relevant published articles on the factors which significantly influence practice of smoking cessation counselling provision (Hudmon *et al*., 2003; 2006; Brewster *et al*., 2005a; 2005b; Ashley *et al*., 2006; Meshack *et al*., 2009). The content validity of the questionnaire was done by two experts in the field before it was pilot-tested among five lecturers and five students from two different institutions.

The questionnaire included socio-demographic information, collected through seven relevant items. A total number of 17 items on self-efficacy, ten statements on attitudes, and nine items on perception on ideal pharmacists' roles pertaining to providing smoking cessation counselling were included, assessed using a five-point scale. Practice was assessed with Yes/No questions for ten statements on students' activities pertaining to smoking cessation counselling in addition to two qualitative questions on the number of smoking cessation counselling provided. 'Yes' answers were applicable for practice statements if students performed the mentioned tasks with more than 50 percent of their encounters in the past year. Smokers were operationalised to include adults who had been smoking in the past week, and more than ten cigarettes per day. Smokers may include friends, family members or customers and patients encountered during attachment or clerkship. Besides, knowledge was assessed with 14 multiple choice questions (MCQs) with one correct answer.

The questionnaire to assess self-efficacy, attitudes, perceptions on ideal pharmacists' roles in providing smoking cessation counselling, practice activities and knowledge was administered to 140 pharmacy students in their third- and final-year from a private institution in Klang Valley, Malaysia. Only students from the third- and final-year were included as these students had exposure to the basics of patient counselling techniques, and had undergone attachments in which they would have had encountered customers and patients who were smoking. The third-year students did not have any formal prior exposure to tobacco-related topics and had a 42-hour community pharmacy attachment in their previous semester. The final-year students had approximately two-hours exposure to tobacco-related topics in the curriculum and 120-hour clinical clerkships in the hospitals in their previous semester. Ethical clearance from the IIUM Research Ethics Committee (IREC 430) and informed consent for experimentation with human subjects from the study participants were obtained.

Statistical Analyses

Data analyses were initiated using SPSS Data Editor Version 18.0 software. Internal consistency for five-point items in the questionnaire was assessed using Cronbach's coefficient *alpha*, and the obtained value was 0.87 which indicates good internal consistency. Generally, Cronbach's *alpha* values obtained for all the constructs were above the cut-off point (0.7) except for negative attitudes. The Cronbach's *alpha* values for individual constructs were: 0.92 for self-efficacy, 0.72 for positive attitudes items, 0.59 for negative attitudes, and 0.88 for perceptions on ideal pharmacists' roles.

Mean and standard deviation for all the constructs along with the bivariate correlations among the constructs were determined. To understand the association between each practice item and other constructs, odds ratio were computed. Scores for the constructs (self-efficacy, positive as well as negative attitudes, perceptions of ideal roles, and knowledge) were dichotomised as the 'median score and above' versus 'below the median score' which serves as the referent group, based on the literature. Odds ratios were computed to determine the association between each practice outcome and other constructs. Odds ratio was obtained by dividing the ratio for positive and negative outcomes (yes:no) of practice items with ratio of other construct, *e.g.* self-efficacy (median score and above: below the median score). Independent samples *t*-tests were performed for all the constructs to examine the differences of the respective means between students who had previous exposure to tobacco-related topics and the students which did not have any such exposure. Lastly, the students' number and percentage of involvement in activities pertaining to smoking cessation counselling were tabulated.

Results

A total of 137 pharmacy undergraduates completed the questionnaire, yielding 98 percent response rate. As many as 77 final- and 60 third-year students participated and approximately three-quarters of the participants were female students. The mean age for the final and third-year students who participated in this study was 22.2 (S.D.+0.7) and 21.1 (S.D.+0.7) years old, respectively.

The mean, standard deviation and bivariate correlations between the constructs are presented in Table I. Generally, low scores were obtained for practice and knowledge domains while scores for positive attitudes and ideal role perception constructs were high. Self-efficacy was positively and significantly correlated with practice and knowledge. Positive attitudes were significantly and negatively correlated with negative attitudes. Ideal role perception was positively and significantly correlated with practice and positive attitudes while negatively correlated with negative attitudes.

The computed odds ratios for each practice item and other constructs are presented in Table II. Significant associations were found between practice with self-efficacy and ideal role perceptions.

The mean scores for self-efficacy in providing smoking cessation counselling among the final- and third-year students are presented in Table III. Significant differences for 11 self-efficacy items were found between the final- and third-year students, with higher scores for the former group who had prior exposure to tobacco-related topics.

Table I: Mean, Standard Deviation and Bivariate Correlation between the Constructs (n=137)

Constructs	Mean (SD)	Possible max scores	Self-efficacy	Positive attitudes	Negative attitudes	Role perception	Knowledge
Practice	2.88 (2.15)	10	0.33**	0.11^{ns}	-0.06^{ns}	0.18*	-0.04^{ns}
Self-efficacy	46.83 (8.55)	85	-	0.15^{ns}	0.07^{ns}	0.13^{ns}	0.24**
Positive attitudes	19.16 (2.80)	25	0.15^{ns}	-	-0.30**	0.52**	-0.11^{ns}
Negative attitudes§	11.78 (2.75)	5	0.07^{ns}	-0.30**	-	-0.25**	-0.0^{ns}
Role perception	37.95 (4.27)	45	0.13^{ns}	.052**	-0.25**	-	-0.04^{ns}
Knowledge (%)	39.45 (10.75)	100	0.24**	-0.11^{ns}	-0.01^{ns}	-0.04^{ns}	-

Note: ^{ns}Non-significant, *significant at $p<0.05$ level and ** significant at $p<0.01$ level (two-tailed)
§Lower scores indicate desirable attitude towards smoking cessation counselling

Table II: Students' Practice in relation to their Knowledge, Self-efficacy, Attitude and Ideal Pharmacists' Roles in Smoking Cessation Counselling

	Odds Ratio† (95% Confidence Ratio)				
Activities	**Self-efficacy**	**Positive attitudes**	**Negative attitudes**	**Roles perception**	**Knowledge**
Clinical Practice Guidelines familiarity	1.35^{ns} (0.48-3.80)	1.42^{ns} (0.47-4.31)	1.65^{ns} (0.54-4.99)	**3.55*** (1.09-11.55)	1.03^{ns} (0.37-2.86)
Discussed smoking effects	1.66^{ns} (0.08-3.34)	1.51^{ns} (0.73-3.11)	1.46^{ns} (0.72-2.98)	**2.60*** (1.28-5.28)	0.79^{ns} (0.40-1.58)
Discussed second-hand smoke effects	**2.28*** (1.13-4.61)	1.49^{ns} (0.71-3.11)	1.23^{ns} (0.60-2.52)	1.59^{ns} (0.79-3.21)	1.03^{ns} (0.51-2.07)
Motivated smokers to quit or cut down	1.51^{ns} (0.75-3.04)	1.11^{ns} (0.54-2.28)	1.14^{ns} (0.56-2.33)	1.43^{ns} (0.71-2.88)	0.71^{ns} (0.35-1.43)
Assessed smokers' dependence on nicotine	2.22^{ns} (0.97-5.07)	0.99^{ns} (0.43-2.25)	0.60^{ns} (0.27-1.33)	1.38 ^{ns} (0.62-3.07)	0.81^{ns} (0.37-1.80)
Assessed smokers' readiness to quit	**3.64*** (1.59-8.36)	1.33^{ns} (0.59-2.97)	0.72^{ns} (0.34-1.56)	**2.70*** (1.21-5.99)	0.88^{ns} (0.41-1.87)
Advised smokers about use of NRT	2.02^{ns} (1.00-4.09)	1.10^{ns} (0.53-2.25)	1.22^{ns} (0.60-2.48)	1.89^{ns} (0.94-3.80)	1.22^{ns} (0.61-2.44)
Counselled on behavioural techniques	**3.02*** (1.31-6.98)	1.12^{ns} (0.50-2.52)	1.13 ^{ns} (0.51-2.51)	**3.15*** (1.37-7.29)	0.95^{ns} (0.44-2.07)
Referred to a cessation program	1.67^{ns} (0.67-4.14)	0.75^{ns} (0.30-1.86)	1.36^{ns} (0.54-3.47)	**2.72*** (1.04-7.10)	1.10^{ns} (0.45-2.66)
Followed up on progress	0.76^{ns} (0.24-2.40)	0.90^{ns} (0.28-2.91)	1.04^{ns} (0.32-3.36)	3.51^{ns} (0.92-13.4)	1.52^{ns} (0.47-4.92)

Note: *significant at $p<0.05$ (two-tailed)
† Computed using ratio of number of students who answered 'Yes' for performing the mentioned task, and 'number of students below median' for each construct as the reference group

Table III: Comparison of Self-efficacy Scores between Final- and Third-year Students

Items	Final-Year (n=77) Mean (SD)	Third-Year (n=60) Mean (SD)	*t*-value*
Overall ability to help smokers quit	2.49 (0.09)	2.09 (0.12)	**2.58**
Ability to ask patients about smoking	3.12 (0.97)	3.09 (1.61)	0.12
Ability to advise smokers to quit using tobacco	3.04 (0.83)	2.74 (1.11)	1.68
Ability to assess smokers' readiness to quit	2.68 (0.88)	2.38 (1.11)	1.63
Ability to assist smokers with quitting	2.62 (0.86)	2.17 (1.01)	**2.66**
Ability to arrange follow-up counselling	2.19 (0.96)	1.81 (0.86)	**2.39**
Know the appropriate questions to ask	3.14 (0.91)	2.58 (0.93)	**3.39**
Have the skills needed to counsel	2.69 (0.88)	2.21 (0.97)	**2.89**
Provide motivation to smokers	2.94 (0.78)	2.58 (1.09)	**2.02**
Have the skills to monitor and assist throughout quit attempt	2.52 (0.72)	2.04 (0.81)	**3.49**
Know when a referral is appropriate	2.70 (0.90)	2.49 (0.89)	1.32
Have sufficient therapeutic knowledge of the pharmaceutical products	3.12 (0.94)	2.47 (0.87)	**4.01**
Have sufficient knowledge on behavioural techniques	2.87 (0.92)	2.54 (0.84)	**2.06**
Can sensitively suggest smoking cessation	2.94 (0.80)	2.71 (1.01)	1.32
Ability to provide adequate counselling when time is limited	2.77 (0.79)	2.25 (0.87)	**3.46**
Ability to help ex-smokers from relapsing	2.69 (0.80)	2.34 (0.99)	**2.12**
Ability to counsel smokers who are not interested in quitting	2.32 (0.89)	2.09 (0.92)	1.41

Note: *significant if *t*-value > |2| at $p<0.05$

Table IV: Comparison of Attitude Scores between Final- and Third-year Students

Items	Final-Year (n=77) Mean (SD)	Third-Year (n=60) Mean (SD)	*t*-value*
Positive Attitude			
Most smokers can quit if they really want to	4.01 (1.03)	3.83 (1.09)	0.97
Relief of withdrawal symptoms is important for successful quitting	4.25 (0.73)	4.49 (0.61)	**-2.07**
Smokers appreciate smoking cessation advice	2.94 (0.88)	2.91 (0.95)	0.18
Counselling increases a smoker's likelihood of quitting	3.86 (0.82)	3.92 (0.94)	-0.42
Counselling is a component of pharmaceutical care	4.10 (0.68)	4.26 (0.79)	-1.20
Negative Attitude§			
Counselling is not an efficient use of my time	2.09 (0.92)	1.98 (0.77)	0.51
Smoking is a personal decision which does not concern me	2.05 (0.78)	1.58 (0.79)	1.07
Unwanted counselling might jeopardize relationships	2.74 (0.83)	2.75 (1.11)	-0.07
If smokers can't quit on their own, there is little that I can do	2.48 (1.07)	2.74 (1.06)	-1.34
Smokers do not appreciate counselling	2.77 (0.87)	2.92 (0.94)	-0.97

Note: *significant if *t*-value > |2| at $p<0.05$
§Lower scores indicate desirable attitude towards smoking cessation counselling

Table V: Comparison of Ideal Pharmacists' Roles Perception Scores between Final- and Third-year Students

Items	Final-Year (n=77) Mean (SD)	Third-Year (n=60) Mean (SD)	*t*-value*
Pharmacist should ask their customers/patients if they smoke	4.03 (0.78)	4.02 (0.87)	0.05
Pharmacist should assess their customers'/patients' dependence on nicotine	4.12 (0.61)	4.09 (0.74)	0.18
Pharmacist should assess customers'/patients' readiness to quit	4.13 (0.64)	4.01 (0.77)	0.86
Pharmacist should motivate customers/patients to quit	4.30 (0.61)	4.38 (0.69)	-0.67
Pharmacist should advice customers/patients about use of nicotine replacement therapy	4.42 (0.59)	4.38 (0.59)	0.36
Pharmacist should counsel customers/patients on behavioural techniques for quitting	4.30 (0.65)	4.30 (0.67)	-0.03
Pharmacist should refer customers/patients to a cessation programme/physician for help in quitting	4.13 (0.78)	4.08 (0.78)	0.39
Pharmacist should follow customers'/patients' progress in quitting	4.30(0.69)	4.08 (0.85)	1.58
Pharmacist should educate public about smoking and smoking cessation outside the pharmacy	4.23(0.74)	4.16 (0.84)	0.58

Note: *significant if *t*-value > |2| at $p<0.05$

Attitudes were gauged based on five positive and five negative statements on smoking cessation counselling provision (Table IV). For negative attitudes, lower scores indicate more desirable attitudes towards smoking cessation counselling. No significant differences were found in terms of study years in negative attitudes. The third-year scored significantly higher for only one item of the positive attitudes.

The comparison of mean scores for perceptions on ideal pharmacists' role in providing smoking cessation counselling among the final- and third-year students are presented in Table V. No significant differences were found in terms of study years.

The average practice scores were 2.85 (S.D.+2.40) for the third-year and 2.88 (S.D.+2.11) for the final year students, reflecting low practice level among all the students who participated. The count and percentage for the practice activities are presented in Table VI.

Discussion

The main objective of this study was to assess the perceptions of smoking cessation counselling competency among pharmacy students from a private institution. The relationships between constructs in the questionnaire and the role of prior exposure to tobacco-related topics was also explored. The actual number and percentage of students' involvement in activities related to smoking cessation counselling by their year of study were also determined.

In general, scores for perceptions on ideal pharmacists' roles and positive attitude were high and encouraging, suggesting that the students had a good understanding of pharmacists' ideal role in providing smoking cessation counselling. Practice was significantly associated with self-efficacy and perceptions on ideal pharmacists' roles, in bivariate correlations as well as odds ratios. Therefore improving self-efficacy may improve the practice outcomes. Knowledge had significant bivariate correlation with self-efficacy though its association with practice was not significantly reflected in this study.

The final-year students who had prior exposure to tobacco-related topics in their previous semester were found to have higher self-efficacy scores. This finding corroborates with the findings of other studies (Hudmon *et al*., 2003; 2004; Corelli *et al*., 2005; Schmelz *et al*., 2010). However, it should be mentioned that the improvement observed in those studies following the 'Rx for Change' programme with approximately eight hours of training was substantial. In the study conducted by Hudmon *et al*. involving 544 pharmacy students, the post-training counselling ability score and standard deviation were 3.44 (S.D.+0.81) as compared to 1.62 (S.D.+0.81) at pre-training, $p<0.001$ (Hudmon *et al*., 2003). In another study carried out among 142 pharmacy students at a minority educational institution, Hudmon *et al*. found that the post-training counselling ability, 4.02 (S.D.+0.72) improved from 2.85 (S.D.+1.02) at the pre-training (Hudson *et al*., 2004). In our study, the average self-efficacy score and standard deviation in providing smoking cessation counselling were 2.75 (S.D.+0.50) and 2.39 (S.D.+0.69) among the final- and third-year students, respectively. Although the average self-efficacy scores in our study were comparable to the score obtained by Hudmon *et al*. (2004), there is a need for improvement in terms of self-efficacy through more intensive training.

The Global Health Professions Student Survey (GHPSS) findings reported that the majority, more than 80 percent, of the third-year pharmacy students who participated in this global survey recognised pharmacists as role models in society (Warren *et al*., 2013). Aina *et al*. (2009) reported that 85.9 percent of 291 pharmacy students were willing to help smokers to quit, and 93.1 percent expressed their thoughts that Nigerian pharmacists and pharmacy students should be involved in quit smoking programmes (Aina *et al*., 2009). Our findings on the roles of ideal pharmacists corroborate these findings as more than 50 percent of the students in our study scored greater than four, on a scale of five, for all the nine statements on ideal pharmacists' roles in smoking cessation counselling.

In our study, the students' responses on positive attitudes statements were encouraging with more than 70 percent scoring greater than four on a scale of five for all the five statements, although there is scope for improvement in terms of negative attitudes by providing comprehensive training to the students. 'Smokers appreciate smoking cessation advice' had the lowest mean scores for positive attitudes which was in-line with the scores received for 'Smokers do not appreciate counselling' in negative attitudes. This may reflect students' lack of insight of the complex nature of addiction as well as the difficulties in quitting. Besides, students' concern that 'unwanted counselling might jeopardise relationships between patients and pharmacists' was also reflected in the findings, can be overcome by introducing motivational interviewing which emphasises empathy and client empowerment (Rollnick *et al*., 2008). Saba *et al.* conducted a study among 136 final-year Bachelor of Pharmacy students in Australia and reported that total attitudes scores improved from pre-training of 86.4 percent (S.D.+12.1) to 88.8 percent (S.D.+9.1), $p=0.0012$ which is significant, though small (Saba *et al*., 2013). From our study, there was not much statistical difference between the attitudes of students who had prior exposure and those with no exposure to tobacco-related topics. This suggests that improvement in terms of attitudes and its measurement can be more challenging as compared to other variables such as self-efficacy and knowledge.

On knowledge, Saba *et al*. found the scores improved from pre-training of 65.8 percent (S.D.+9.1) to 74.9 percent (S.D.+8.1), $p<0.001$ at post-training (Saba *et al*., 2013). In thus study, the mean knowledge scores obtained by the final-year students 42.7 percnt (S.D. +10.9) versus 35.2 percent (S.D.+11.2) among the third-year pharmacy students. Generally, the knowledge scores obtained in this study were low and necessitate an appropriate intervention to improve tobacco-related and smoking cessation counselling knowledge.

Brown & Janke reported significant mean improvement in knowledge score of 48 percent at $p<0.001$, following a web-based intervention (Brown & Janke, 2003). Besides, 60 percent improvement in practice at the one-year follow-up was also reported in their study. In our study, 40 percent of the final-year and 18 percent of the third-year students reported to have provided at least one smoking cessation counselling. However, the composite scores for practice activities were low and did not differ much between the third- and final-year though there was substantial difference in terms of self-reported provision of counselling. The possible explanation lies in the complexity of smoking cessation counselling definition. Smoking cessation counselling is a complex task which consists of multiple tasks within itself. It is possible that students who had given general advice to a smoker considered that act itself as smoking cessation counselling. This was supported by the fact that 18 percent of the third-year students, who never had any formal exposure to tobacco-related curricula, reported to have provided at least one smoking cessation counselling. While this is encouraging, it is imperative for these students, as future healthcare providers, to learn the proper and comprehensive smoking cessation counselling techniques. The practice outcomes measured in this study were low, and one possible explanation for this is that the students lacked avenues to practice. A strength of this study is that it has provided insight into local students' perception of smoking cessation counselling and the need for improvisations for future studies considering the differences in attitude and culture of the local students, as opposed to the studies done in North America on which the development of the current questionnaire was mainly based on.

Limitations

The self-reported counselling sessions as well as other activities in the practice construct were not verified by any objective measures, and competency measures in terms of students' skill to provide smoking cessation counselling were not included in this study. The generalisability of the findings is limited as the sample was obtained from only one institution. A larger sample is warranted to study the associations between practice and other constructs, such as attitude and knowledge.

Conclusion

There is scope for improvement in terms of knowledge pertaining to smoking cessation counselling. As little as two-hours of exposure to tobacco-related topics reflected significant higher self-efficacy scores among the final-year students. An implication of this study is that tobacco-related curricula focussing on smoking cessation counselling would be of value for these future pharmacists in terms of perceived competency as well as actual provision of smoking cessation counselling.

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SS was the lead for the research. Both authors contributed to the concept, design of the study and manuscript.

Conflict of interest

The authors have no competing interests to declare.

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