

KNOWLEDGE, ATTITUDES AND PRACTICES OF PHYSICAL EDUCATION PRE-SERVICE AND IN-SERVICE TEACHERS TOWARD PHYSICAL ACTIVITY PROMOTION: A CROSS-SECTIONAL STUDY

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ABSTRACT

The aim of this study was to evaluate the knowledge, attitudes and practices of PE teachers toward physical activity (PA) promotion. The study population consisted of 202 pre-service PE teachers and 43 in-service PE teachers. The survey was conducted from April to May 2014 in Taza city, Morocco. The data was obtained using a self-reported questionnaire. Almost all of the respondents were aware about existence of PA recommendation guidelines and 69% of them were aware of the positive effects of PA on academic performance. Almost all of respondents had high knowledge regarding the positive effects of PA on health and quality of life. Only 37.2% of participants recommend habitually regular PA to students. About half of PE teachers have participated in a PA promotion activity and only 10.2% of them had a project on PA promotion. Recommending regular PA and participating in a PA promotion activity were the factors associated with motivated teachers to participate in PA promotion. The study had globally shown an existing favorable condition at the schools among the PE teachers for implementing programs and interventions.

Keywords: Physical education teacher, physical activity, promotion, Morocco.

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1. INTRODUCTION

Physical education (PE) at schools can play an important role in reducing sedentary behavior and contribute to population health. The health benefits of physical activity (PA) are well documented (Poitras, Gray, Borghese, Carson, Chaput, Janssen, ... & Tremblay 2016; Wilson, Ellison, & Cable, 2015; Neuffer, Bamman, Muoio, Bouchard, Cooper, Goodpaster, ... & Laughlin 2015), and schools around the world have become major settings for the promotion of health and wellbeing (Naylor, Nettlefold, Race, Hoy, Ashe, Wharf Higgins, & McKay 2015). Physical education (PE) at schools can play an important role in reducing sedentary behavior and contribute to population health (Dallman, Abercrombie, Drewette-Card, Mohan, Ray, & Ritacco, 2009; Choi & Chepyator-Thomson, 2012; Langford, Bonell, Jones, Pouliou, Murphy, Waters, ... & Campbell 2015). However, there are several barriers that prevent PE from playing the greater role in providing and promoting PA, including those associated with the structural delivery as PE facility characteristics, teacher credentials, scheduled lesson length and the number of lessons provided per week (McKenzie & Lounsbery, 2013).

Morocco is a country from North Africa that undergoing an important epidemiological and nutritional transition (Santosa, Wall, Fottrell, Högberg, & Byass, 2014). In adults, Najdi, El Achhab, Nejjari, Norat, Zidouh, & El Rhazi (2011) has demonstrated that urbanization and having high income are main determinants of low PA and the overall proportion of the lowest physically active category was 16.5%. In adolescents, a recent study showed that one in five of the adolescents surveyed was inactive, with almost 45 % of the sample reporting television viewing for more than 2 hours per day and 38 % engaged in computer use for a similar period (Hamrani, Mehdad, El Kari, El Hamdouchi, El Menchawy, Belghiti, ... & Aguenau, 2015). Promotion of healthy lifestyle is urgently needed to reduce the risk of developing chronic diseases.

School PA promotion is influenced by beliefs and attitudes of teachers of PE. Teacher socialization research provides evidence that socio-cultural characteristics of pre-service teachers are relevant to the choices they will make as practicing teachers (Zeichner & Gore, 1990; Doolittle, Dodds, & Placek 1993; Webster, Monsma, & Erwin 2010; Webster, 2011). In this study, we evaluated the knowledge, attitudes and practices of pre-service and in-service teachers of PE toward PA promotion as a precursor to prepare an interventional study.

2. METHODS AND MATERIALS

2.1 Participants

This multicenter and cross-sectional study took place between April and May 2014. Pre-service teachers of PE were recruited from Regional Center of Carriers Education and Training of Taza city. In-service teachers of PE and sport were recruited from high schools in the same city. Approval to conduct this study was obtained from the dedicated Moroccan authority of ministry of education in Taza city. Informed consent was obtained from each participant following the guidelines of the Helsinki Convention.

2.2. Procedure and Data Collection

The data for this cross-sectional study was obtained using a self-reported questionnaire. Items for the questionnaire were written based on a review of the literature. Five experts in PA promotion, including three PE teacher, epidemiological researcher and social science researcher, reviewed the items for thoroughness and content validity. The questionnaire was pre-tested in a pilot study. It was divided in 3 components. The first component is based on socio-demographic characteristics. Knowledge was assessed through four items and five items were developed to assess attitudes and practices of teachers toward PA promotion. The questionnaire was distributed to all pre-service and in-service teachers of sport and PE in Taza city. Questionnaire response rate was 81 % for pre-service teachers and 60% for in-service teachers in the current study.

2.3. Statistical analysis

Categorical variables were presented as a proportions and numeric variables by mean and standard deviation. The Student's *t* test was used to compare means, and chi-square test (χ^2) was used to compare percentages. Multivariate logistic regression was used to estimate the probability (presented as odds ratios) for PE teachers to adhere in a program or activity of PA promotion adjusting for socio-demographic, knowledge, attitudes and practices variables. All analyses were performed using SPSS version 14.1 with significance set at 5%.

3. RESULTS

A total of 322 questionnaires were distributed and 245 questionnaires were completed with a response rate of 76%. The distribution of various characteristics of the study population (pre and in-service teachers in Taza city, Morocco) is shown in Table 1. The mean of age was 29.9 ± 7.6 years and females represented 21.6% of participants. All pre-service teachers had bachelor's degree or a master however 34.9 % of in-service teachers had high school degree. Associative activities are

concerned by 35.5% of teachers without significant difference between pre and in-service groups.

Table 1: Characteristics of the study population in Taza city, Morocco.

Variables	Categories	Physical education teachers			P
		Total (n=245)	Pre-service (n=202)	In-service (n=43)	
Sex	Male	192 (78.4)	155 (76.7)	37 (86.0)	0.18
	Female	53 (21.6)	47 (23.3)	6 (14.0)	
Age (years)		29.9 ± 7.6	27.6 ± 4.6	40.9 ± 9.4	<0.001
Age group (years)	<40	213 (86.9)	195 (96.5)	18 (41.9)	<0.001
	40 and over	32 (13.1)	7 (3.5)	25 (58.1)	
Education	High school	15 (6.1)	0 (0.0)	15 (34.9)	-
	Bachelor	208 (84.9)	185 (91.6)	23 (53.5)	
	Master	22 (9.0)	17 (8.4)	5 (11.6)	
Education specialty	Literary	110 (44.9)	97 (48.0)	13 (30.2)	0.03
	Scientific	135 (55.1)	105 (52.0)	30 (69.8)	
Associative activity	Yes	87 (35.5)	68 (33.7)	19 (44.2)	0.19
	No	158 (64.5)	134 (66.3)	24 (55.8)	

All values shown are n (%) or mean ± SD.

Most of participants were aware (90.2%) of the existence of recommendations for PA and only 8.6% of them knew exactly the minimal time recommended (150 minutes of moderate-intensity aerobic activity through a week (WHO, 2010) (Table 2). Almost all the respondents had high knowledge about the positive effects of PA on health and quality of life; however only 69% were aware about the strong evidence of a significant positive relationship between PA and academic performance.

Most of PE teachers were aware (91%) of their important role in PA promotion however only 37.2 % of them constantly recommended regular PA for their students (Table 3). In-service teachers were found more likely to recommend regular PA more than pre-service teachers (57.9% vs 33.0%; $p=0.01$). Teachers interviewed, in this study, advised regular PA only to their friends, students and/or family. Participating in a PA promotion activity was advocated by 49.4% of respondents. Only 10.2% of respondents had a project on PA promotion however 75.1% were motivated to participate in a program or activity of PA promotion.

Table 2: Knowledge of pre and in-service teachers regarding PA recommendations and its impacts

Variables	Categories	Physical education teachers			p
		Total (n=245)	Pre-service (n=202)	In-service (n=43)	
Recommendations on PA	Yes	221 (90.2)	184 (91.1)	37 (86.0)	0.39*
	No	24 (9.8)	18 (8.9)	6 (14.0)	
If yes; MIAA (min/week)		150±49	152±49	139±47	0.14
If yes; MIAA classes (min/week)	<150	117 (52.9)	98 (53.3)	19 (51.4)	-
	150	19 (8.6)	13 (7.1)	6 (16.2)	
	>150	85 (38.5)	73 (39.7)	12 (32.4)	
Positive effect of regular PA on:					
- Health	Very important	126 (51.4)	103 (51.0)	23 (53.5)	-
	Important	118 (48.2)	98 (48.5)	20 (46.5)	
	Somewhat	1 (0.4)	1 (0.5)	0 (0.0)	
- Academic achievement	Agree	169 (69.0)	132 (65.3)	37 (86.0)	-
	Neither	49 (20.0)	44 (21.8)	5 (11.6)	
	Disagree	27 (11.0)	26 (12.9)	1 (2.3)	
- Quality of life	Agree	240 (98.0)	198 (98.0)	42 (97.7)	-
	Neither	4 (1.6)	3 (1.5)	1 (2.3)	
	Disagree	1 (0.4)	1 (0.5)	0 (0.0)	

All values shown are n (%) or mean ± SD. MIAA: moderate-intensity aerobic activity

* Fisher exact test

Table 3: Attitudes and practices of pre and in-service teachers regarding PA promotion

Variable	Categories	Physical education teachers			p
		Total (n=245)	Pre-service (n=202)	In-service (n=43)	
Physical education teacher had an important role in PA promotion	Important	222 (91.0)	182 (90.5)	40 (93.0)	-
	Somewhat	13 (5.3)	12 (6.0)	1 (2.3)	
	Not important	9 (3.7)	7 (3.5)	2 (4.7)	
Recommending regular physical activity	Yes	232 (94.7)	192 (95.0)	40 (93.0)	0.71*
	No	13 (5.3)	10 (5.0)	3 (7.0)	
If yes; precise:	Always	83 (37.2)	61 (33.0)	22 (57.9)	0.01
	Sometimes	96 (43.1)	84 (45.4)	12 (31.6)	

	Rarely	44 (19.7)	40 (21.6)	4 (10.5)	
	Friends	96 (41.4)	81 (42.2)	15 (37.5)	0.46
If yes; to whom:	Students	85 (36.6)	67 (34.9)	18 (45.0)	
	Family	51 (22.0)	44 (22.9)	7 (17.5)	-
Participation in a PA promotion activity	Yes	121 (49.4)	93 (46.0)	28 (65.1)	0.02
	No	124 (50.6)	109 (54.0)	15 (34.9)	
	Associative	100 (83.4)	76 (82.6)	24 (85.7)	-
If yes; precise the frame:	Personal	19 (15.8)	16 (17.4)	3 (10.7)	
	Other	1 (0.8)	0 (0.0)	1 (3.6)	
Having a project on PA promotion	Yes	25 (10.2)	14 (6.9)	11 (25.6)	<0.001*
	No	220 (89.8)	188 (93.1)	32 (74.4)	
Type of project:	Clubs	13 (72.2)	8 (88.9)	5 (55.6)	-
	Others	5 (27.8)	1 (11.1)	4 (44.4)	
Ready to participate in a program or activity of PA promotion	Yes	184 (75.1)	150 (74.3)	34 (79.1)	-
	No	20 (8.2)	16 (7.9)	4 (9.3)	
	Don't know	41 (16.7)	36 (17.8)	5 (11.6)	

All values shown are n (%) or mean \pm SD. PA: physical activity

* Fisher exact test

Table 4: Factors associated with teachers who are ready to promote PA using multivariate logistic regression analysis

Independent variables	Odds ratio	95% confidence interval	P value
Recommending regular PA (rarely or no versus always or sometimes)	5.71	2.74-11.90	<0.001
Participation in a PA promotion activity	3.94	1.88-8.27	<0.001

Multivariate logistic regression analysis was used to determine the factors associated with teachers' interest in participating in PA promotion programs (Table 4). Being a pre-service or in-service teacher was not significantly associated with participation in PA promotion programs. Teachers who were participating in a PA promotion activity and who were recommending regular PA, were very motivated teachers to participate in PA promotion project (OR 3.94, 95% CI: 1.88-8.27, $p < 0.001$; OR 5.71, 95% CI: 2.74-11.90, $p < 0.001$; respectively).

4. DISCUSSION

It was observed that almost all of the respondents were aware of the existence of PA recommendation guidelines, while only a few of them knew that the PA recommendation guideline is at least 150 minutes of moderate-intensity aerobic activity per week. It was also observed that 69% of the respondents were aware about the strong evidence of positive effects of PA on academic performance. However, almost all of respondents had high knowledge about the positive effects of PA on health and quality of life. Only 37.2% of participants recommend habitually regular PA to students. About half of PE teachers have participated in a PA promotion activity and only 10.2% of them had a project on PA promotion. Being in pre or in-service was not associated with participation in PA promotion. Recommending regular PA and participating in a PA promotion activity were the factors associated with motivated teachers to participate in PA promotion.

The teachers' lack of knowledge of the precise PA recommendation for adults and young people is somewhat alarming and adds weight to the findings from previous research that there is inadequate health-related PA knowledge amongst pre-service and in-service teachers (Choi & Chepyator-Thomson, 2012; Harris, 2014; Webster, Webster, Russ, Molina, Lee, & Cribbs, 2015). It seems that PE teachers' education is not adequately preparing future PE teachers to promote healthy, active lifestyles and is not addressing previously identified issues in health-related teaching and learning (Harris, 2014). Given increased attention to PE as a key player in the promotion of health, it has become vital to review the mission and scope of professional preparation programs designed for pre-service PE teachers (Sallis, McKenzie, Beets, Beighle, Erwin, & Lee, 2012; Webster *et al.*, 2015). Additionally, in-service PE teachers need to be encouraged and supported to adopt a broader view and understanding of PA promotion.

Health is addressed in schools by various government policies and has explicitly included PE (CDC, 2011; McKenzie & Lounsbery, 2014). The contribution to public health via promoting health enhancing lifestyles and increasing PA has been viewed as the most important objective of PE (Lonsdale, Rosenkranz, Peralta, Bennie, Fahey, & Lubans, 2013; Russ, 2015). The obesity epidemic, evidence that most youth are not meeting PA guidelines, and the erosion of PE and PA practices over the two last decades have created a new urgency for providing more PA to all children, which many get PA only through PE (Hills, Dengel, & Lubans, 2015). In this view, school-based interventions are thought to be the most universally applicable and effective way to counteract physical inactivity (Kriemler, Meyer, Martin, van Sluijs, Andersen, & Martin, 2011). PE teachers are the principal protagonist in almost all of such interventions (Webster *et al.*, 2015; Hills *et al.*, 2015; Pérez-López, Sánchez, & Delgado-Fernández, 2015).

In our context, half of teachers were participated in a PA promotion activity and only one per ten of them had a project on PA promotion. This may be explained by lack of sensitization about their public health mission and their leading role to play through an effective education for young people.

Given the availability of PE teachers to promote PA in this study, it is important to recognize that there are a number of institutional and teacher-related barriers restricting the delivery of effective PA promotion (Kelishadi, Ghatrehsamani, Hosseini, Mirmoghtadaee, Mansouri, & Poursafa, 2010; Langford, Bonell, Jones, & Campbell, 2015; Michael, Merlo, Basch, Wentzel, & Wechsler, 2015). Institutional PE barriers have included a crowded curriculum, budget, sport equipment and time constraints. Also, making schools facilities available to the public generate other barriers such as safety, insurance, and liability concerns (Evenson & McGinn, 2004). Promoting PA among young people, need teacher's role to be defined, supported, and valued. This study highlighted gaps that must be filled in order to develop a promotional PA action in which the PA teacher will be the key player.

Several limitations are evident. First, despite the overall survey response rate, the nonresponse bias may be a limit of this study. Teachers who did not participate in this study may have been less motivated to promote PA. Furthermore, the cross-sectional nature of the survey limits the interpretation of the associations demonstrated in this study. The main strengths of this study were its novelty and its diversity in sampling.

5. CONCLUSIONS

In summary, overall, more than half of teachers had high knowledge, positive attitude and practiced PA promotion showing favorable conditions existed at the schools among the PE teachers for implementing programmers and interventions. A qualitative study among PE teachers about school health especially PA would further clarify some gaps about PA promotion.

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