



Spine-related Behavior among a sample of Students regarding Backpack Carrying

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ABSTRACT

Aim: Back pain is one of the most important public health problems among students especially among who carrying backpack to school. The aim of this study was to assess healthy spine-related behavior among these students.

Instruments and Method: A descriptive study was conducted on a random sample of students attending public elementary schools in Tehran, Iran. The students completed a questionnaire containing items on cognitive abilities sections of knowledge, outcome expectation beliefs, self- efficacy companion with a checklist to assess their skills on back care behaviors. The last section was about items regarding back care behaviors. All collected data entered to SPSS version 24 and analyzed.

Findings: In all, 204 students were entered into the study. The Mean (SD) of knowledge, Outcome expectation beliefs, Self- efficacy, Skills and Back care behaviors were as 4.71 ± 1.40 ; 20.48 ± 6.44 ; 13.89 ± 4.44 ; 65.84 ± 16.16 ; and 20.94 ± 6.65 respectively.

Conclusion: The findings of this study suggest that the probably influencing factors on back care behaviors were not in optimal status. Accordingly, doing multi-central causative studies to confirm the results is strongly recommended.

Keywords: Knowledge, Outcome Expectation Belief, Self-efficacy, Skill, Back-related behavior, Student

Introduction

Nowadays, one of the most prevalent public health problems especially among adolescent is back pain ^[1]. It has been argued that back pain in adulthood is so associated with back pain in younger ages ^[2]. Furthermore, existed evidences showed female adolescents are at higher risk compared with male adolescents regarding this health ^[2].

It has been discussed that physical inactivity ^[1,3], unhealthy posture during daily activity ^[4,5], prolonged improper backpack loading during the childhood years and carrying the bag in one side of body ^[4] are influent behavioral risk factors for back pain among adolescents. It has been revealed that three main psychological factors including Behavioral Capability

(knowledge and skills to perform a given behavior); Self-Efficacy (SE); and Outcome Expectation Beliefs (behavioral beliefs) could predict any behavior changes ^[6]. Hall et al. ^[7] verified that Knowledge, and Self-Efficacy are positively correlated with Behavior, for students studying in fifth grade. Considering existed studies, it has been obvious that there are many researches which addressed the effectiveness of different educational programs on changing unhealthy spine-related behaviors on children and adolescents ^[8]. However, these studies showed that there are challenges regarding the most effective programs and that if these programs did their effects on back related behaviors through improving knowledge and self-efficacy. These challenges

might be due to not assessing the needs of students especially about predicting factors like knowledge, self-efficacy and expectation outcome. Thus, this study aimed to explore these factors in order to investigate the extent to which these factors need to be improved in future interventional designed studies so that could promote back-related behavior among schoolchildren. We hope the findings from this study could lead to designing proper interventional programs for students studying in elementary schools.

Instrument and Method

This study applied a descriptive design to explore the healthy spine-related behaviors among 5th-grade students studying in elementary schools in Tehran, Iran from Oct 2018 to Mar 2019. The studied variables were knowledge, self-efficacy, skills, and outcome expectation beliefs and back-related behavior. The study sample included 204 female students aged 11 years who were selected from randomly selected elementary schools in North-West of Tehran, Iran. The socio-economic characteristics of students of this area in Tehran has different varieties like all other parts of Tehran. In this study the following instruments were used to collect data.

1. The questionnaire regarding demographic characteristics including the parents' job / level of education and a question regarding suffering from back pain during last week with the response option of Yes or No.

2. The instruments of previous studies [9,10-11] which was provided with good test-retest stability were used to measure main variables of this study. Cultural adaptation and psychometric testing were consequently performed. This instrument contained 43 items including the following

sections:

I. Back care knowledge that consist of 10 multiple-choice items on general back care knowledge. For each item respondents could select a correct option from a list of answers. The right answers received 1 point and if it was wrong, the zero score was considered for that item. The total score on knowledge ranged from zero to 10 where the higher scores indicated higher knowledge [10].

II- Back care skills, which included a checklist for practical assessment of skills, for back care principles. The reliability of this checklist ranged from 0.79 to 0.98. The checklist included 24 items regarding seven tasks (sitting at a table; picking up the crate; carry the crate; set the crate down on the table; pick up a pencil; move the crate; and book bag use). In present study, the item 'Use of ring binder' was omitted from the original test, because the tables in class did not have ring binder. Therefore, from the original 24 items checklist version used by Cardon et al. [9], 23 items were used in this study. Each item of this check list, is rated on a 5-point scale ranging from 1 (very poor) to 5 (excellent) giving score ranging from 23 to 115 where higher scores indicated better fulfillment of tasks.

III- Self-efficacy contained 4 items asking that how easy or difficult the following actions were: participation in daily physical activity and sports, keeping a natural curvature of the spine, minimal loading of the book bag and paying attention to ergonomically postures. Each item is rated on a five-point scale (from difficult to easy) giving score ranging from 4 to 20 where the higher scores indicated higher self-efficacy.

IV. Outcome expectation beliefs (behavioral

beliefs) included 6 items asking whether sitting, swimming, running, participating in physical education, cycling and lifting heavy objects are 'dangerous' when having a backache. Each item is rated on a five-point scale (strongly disagree to strongly agree) giving score ranging from 6 to 30 where higher score indicated stronger beliefs ^[11].

3. Back-related behavior as outcome measure contained six questions about daily activities on measuring weight of the book bag; carrying the bag with 2 straps; knee position when putting on shoes; doing daily exercises; and postural behavior while lifting and carrying objects. Each item is rated on a five-point scale (never = 1 to ever = 5) giving a score ranging from 6 to 30 where higher scores indicated better preventive behavior ^[11].

Before data collection, the aim and procedures of this study were explained to the principals, teachers, and students of the two schools. If they were satisfied to be studied, the questionnaire were distributed among them. Two independent research assistants helped the study to be conducted, and rated the students' skills based on checklist. All data were gathered through the instruments and were analyzed using descriptive statistics by SPSS version 24.

Findings

Totally, 204 students aged 11 years participated in the study. Of all students 22.5% (n=46) reported back pain during last week. The common characteristics of these students are presented in Table 1. In general, the students' scores on knowledge were reasonable (mean = 4.71). The means and standard deviations of skill, self y

efficacy, outcome expectancy belief and back related behavior are shown in Table 2.

Discussion

This study was done to explore the probably predicting factors of back-related behavior among elementary schoolchildren. The results of this study showed the knowledge of the studied students are lower than the researchers thought. As previous studies showed that knowledge regarding back related behaviors is an important factors could predict the behaviors ^[6-7], so it seems, designing proper interventional program to promote knowledge of the students is essential. Of course there are some evidence that have shown there is no relationship between knowledge of back principals and back-related behavior. In this regard, Santos et al. ^[8] reported promoting knowledge could not cause back care behaviors. Perhaps this is because people usually do not act based on their knowledge and the fact that increasing knowledge alone is unlikely to promote positive and persisting behavioral change without coincident other strategies like self- efficacy and outcome expectation beliefs ^[6].

Although previous studies revealed that self-efficacy has been an important influencing factors of back-related behavior ^[7-8], the results of this study showed self - efficacy mean score is not in an optimal rate. Therefore, according to existed evidences, interventions should be designed to improve students' self-efficacy towards proper back-related behavior.

The other finding of this study was about outcome expectancy beliefs which determined this probably factor was not in desirable status. This finding gives

Table 1) The demographic characteristics of the studied students (n = 204)

Father's job	Options	Number (Percent)
	Employed	181 (88.8)
	Unemployed	4 (2.0)
	Retired	11 (5.4)
	Missing	8 (3.9)
Mother's job		
	Employed	40 (19.6)
	Housewife	160 (78.4)
	Missing	4 (2.0)
Father's level of education		
	Illiterate/primary	3 (9.9)
	Secondary	87 (42.6)
	Higher	69 (33.8)
	Missing	28 (13.7)
Mother's level of education		
	Illiterate/primary	34 (16.7)
	Secondary	94 (46.1)
	Higher	55 (27.0)
	Missing	21 (10.3)
Presence of back pain		
	Yes	46 (22.5)
	No	154 (75.5)
	Missing	4 (2.0)

Table 2) Students' status regarding studied variables (n= 204)

	Mean \pm SD	Minimum	Maximum
Knowledge	4.71 \pm 1.40	0	10
Outcome Expectation belief	20.48 \pm 6.44	6	30
Self-efficacy	13.89 \pm 4.44	4	20
Skills	65.84 \pm 16.16	23	115
Back care behavior	20.94 \pm 6.65	6	30

the sense that high risk back related behaviors might be due to weak beliefs of the students about outcome dangers of back pain. Similarly, previous research ^[12] reported that human behavior would be done when they strongly believed on its' positive outcomes. Therefore, in order to enhance students' back-related behavior, we need to improve their beliefs towards dangers of pain and pain consequences. Actually, belief improvement in elementary students must be included in designed educational programs in order to remove any misbelieves in this target group.

Although existed evidences showed that behavioral capability such as enhanced skill is a influent factor for performing a given behavior ^[6], the present study showed that the skill of the students is not in the extend the authors expected. However, it seems, improving students' skills might be able to promote their healthy back-related behavior. In this regard, previous study suggested educational interventions need to target children's skills toward back-related behavior, during adolescents' ages while adaptive beliefs/ attitudes and healthy habits are being formed ^[12].

As final finding of this study it could be

stated that the back related behaviors of the studied students of this study were not in optimal status. According the above mentioned probably influencing factors, unhealthy back - related behaviors of these students were suggestible. Thus, based on these findings, this study strongly recommended on designing proper educational program to improve knowledge, skills, outcome expectation beliefs and self - efficacy in order to improve back - related behaviors.

This study can add values to what we already know on the topic. As such we believe effective interventions based on stated factors could be developed for back care related interventions. However, future studies should focus on causative studies and interventional designs based on the studied factors related to healthy back-related behavior.

As other studies, there are some limitations in this study. One of these limitations is collecting data through self - reporting that may effect on data accuracy. Descriptive design of this study can show just the present status of the studied variables. Thus doing causative and interventional studies based on the findings of this study

is recommended. This study was only done among female fifth grade students and so is not generalized to other students groups.

Conclusion

The findings of this study suggest that the probably influencing factors on back care behaviors were not in optimal status. Accordingly, doing multi-central causative studies to confirm the results is strongly recommended.

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Ethical Permission: The study was registered by the ethics committee of TMU with the code IR.TMUREC.1396.727.

Conflicts of interests: The authors declare that they have no conflicts of interests.

Authors' contribution: ZAC was the main investigator, collected and analyzed the data, and wrote the first draft. SST supervised the study. AM contributed to analysis, interpretation and writing process. All authors read and approved the final manuscript.

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