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Effect of an educational pamphlet on the awareness of parents of primary school children about dento-facial characteristics: Mashhad, Iran

Background: Today, most universities around the world are looking for educational methods that promote healthcare providers. Due to the lack of study in this field and the importance of healthcare providers providing care services to patients, therefore, the purpose of this study was to compare the effect of the lecture and Jigsaw teaching technique on first-aid learning in healthcare provider students.

Method: In this semi-experimental study, 50 healthcare provider students were randomly divided into control (traditional method) and case (Jigsaw method) groups with health care training for four sessions of 90 minutes in the form of basic first aid lessoning. At the first and end of the study, pre and post-exams have been taken from both groups.

Results: In this research, the 50 students were studied in case and control groups. There were no significant differences in terms of age ($P=0.678$), sex ($P=0.474$), location ($P=0.77$), marital status ($P=0.774$), and total GPA ($P=0.68$) between the experimental and control groups. The results also showed that the difference between the mean and standard deviation of pre-and post-test results in the experimental group was significantly higher than in the control group ($p<0.001$). Thus, the effectiveness of the jigsaw educational method on the learning of the control group was confirmed.

Conclusion: The results showed that the Jigsaw training method can be very effective in the learning rate of healthcare provider students. Additional studies are recommended to achieve reliable results.

Keywords: Jigsaw Teaching Method, Lecture Teaching Method, Learning, Health Care Provider

تأثیر کتیب تربوی علی وعی اولیاء امور أطفال المدارس الابتدائية بخصائص علاج الوجه: مشهد، ایران

الخلفية: اليوم، تم التركيز في طب الأسنان على الوقاية. يعتبر الكتيب أداة رائعة لنقل المعلومات وزيادة الوعي. في هذه الدراسة، كان الهدف هو تحديد فعالية كتيب تثقيفي حول وعي والديين بمشاكل الأسنان لدى أطفال المدارس الابتدائية في مشهد، إيران.

الطريقة: تم اختيار ٦٠١ من أولياء أمور أطفال المدارس الابتدائية بطريقة التجميع العشوائي من المدارس الابتدائية من ٧ مديريات في مشهد. في كل منطقة تدريب، دخلت الدراسة مدرسة ابتدائية للبنات للمجموعة التداخلية ومدرسة للبنات للمجموعة الضابطة. في الجلسة الأولى، تم تسليم الاستبيان ١ لأولياء أمور الأطفال وطلب منهم إكمال الاستبيان. ثم في مجموعات التدخل، تم تسليم الكتيبات التعليمية إلى والديين. بعد شهر واحد من تسليم الكتيب، خلال الجلسة الثانية، وتم إكمال الاستبيان ٢ مرة أخرى من قبل نفس المجموعة وسجلت النتيجة، وتم تسجيل النتيجة قبل وبعد مداخلات والديين. في المجموعة الضابطة، تم تسليم كتيب التدريب خلال الجلسة الثانية بعد ملء الاستبيان ٢.

النتائج: في التقييم الأول، لم يكن لمجموعتين اختلاف معنوي في مستوى الوعي ($P=0.537$)، لكنهما أظهرتا فرقاً معنوياً بعد التقييم الثاني ($P<0.001$). زادت درجة وعي والديين في الاستبيان الثاني بمقدار ٦,١٠ مرة في مجموعة التدخل و ٠,٨٣٤ مرة في المجموعة الضابطة.

الخلاصة: وفقاً للنتائج، تعتبر الكتيبات أداة جيدة لزيادة وعي والديين بأسنان الوجه. الكلمات المفتاحية: الوعي، الأسنان، الوجه، تقويم الأسنان، كتيب

تعیین اثربخشی یک پمفلت آموزشی بر سطح آگاهی والدین کودکان دبستانی درباره خصوصیات فکی - دندانی

زمینه و هدف: امروزه تأکید دندانپزشکی بر روی پیشگیری قرار گرفته است. پمفلت ابزار مناسب برای انتقال اطلاعات و افزایش آگاهی می باشد. در این پژوهش، هدف تعیین اثربخشی یک پمفلت آموزشی بر میزان آگاهی والدین از مشکلات فکی - دندانی کودکان دبستانی در شهر مشهد بوده است.

روش: تعداد ٦٠١ نفر از والدین کودکان سنین دبستان به روش خوشه ای تصادفی از مدارس ابتدایی نواحی ٧ گانه شهر مشهد انتخاب شدند. در هر ناحیه آموزشی، یک مدرسه ابتدایی دخترانه جهت گروه مداخله و یک مدرسه دخترانه جهت گروه کنترل وارد مطالعه شدند. در جلسه اول پرسشنامه ١ در اختیار والدین کودکان قرار داده شد و از آنها خواسته شد که پرسشنامه را تکمیل کنند. سپس در گروههای مداخله، پمفلت آموزشی به والدین داده شد. پس از گذشت یک ماه از تحویل پمفلت در گروه مداخله، طی جلسه دوم، پرسشنامه ٢ توسط همان گروه مجدداً تکمیل گردید و امتیازدهی شد و نمره قبل و بعد از مداخله برای والدین ثبت گردید. در گروه کنترل، یک ماه پس از تکمیل پرسشنامه ١، پرسشنامه ٢ تکمیل شده و سپس پمفلت آموزشی تحویل داده شد.

یافته ها: در ارزیابی اول، بین گروه های مداخله و کنترل اختلاف معناداری میان آگاهی والدین وجود نداشت ($P=0.537$) اما پس از ارزیابی دوم، اختلاف معنادار مشاهده شد ($P<0.001$). نمره آگاهی والدین در پرسشنامه دوم در گروه مداخله ٦/١٠ برابر و در گروه کنترل ٨٣٤/٠ برابر افزایش یافته بود.

نتیجه گیری: با توجه به یافته ها، پمفلت ها ابزار مناسبی برای افزایش آگاهی والدین راجع به مشکلات فکی - دندانی می باشند.

واژه های کلیدی: آگاهی، دندانها، صورت، ارتودنسی، پمفلت

پرائمری اسکول کے بچوں کے والدین کی دانتوں کے چہرے کی خصوصیات کے بارے میں آگاہی پر ایک تعلیمی پمفلٹ کا اثر: مشهد، ایران

پس منظر: آج، دانتوں کی روک تھام پر زور دیا گیا ہے۔ پمفلٹ معلومات پہنچانے اور بیداری بڑھانے کا ایک بہترین ذریعہ ہے۔ اس تحقیق میں، مقصد ایران کے مشهد میں پرائمری اسکول کے بچوں کے دانتوں کے مسائل کے بارے میں والدین کی آگاہی پر ایک تعلیمی پمفلٹ کی تاثیر کا تعین کرنا تھا۔

طریقہ: پرائمری اسکول کے بچوں کے ٦٠١ والدین کو مشهد کے ٧ اضلاع کے پرائمری اسکولوں سے بے ترتیب کلسٹرنگ طریقہ سے منتخب کیا گیا۔ ہر تربیتی علاقے میں، مداخلتی گروپ کے لیے لڑکیوں کا ایک پرائمری اسکول اور کنٹرول گروپ کے لیے لڑکیوں کا ایک اسکول مطالعہ میں داخل ہوا۔ پہلے سیشن میں سوالنامہ ١ بچوں کے والدین کو پہنچایا گیا اور ان سے سوالنامہ مکمل کرنے کو کہا گیا۔ پھر مداخلتی گروپوں میں تعلیمی پمفلٹ والدین تک پہنچائے گئے۔ پرچے کی ترسیل کے ایک ماہ بعد، دوسرے سیشن کے دوران، سوالنامہ ٢ کو دوبارہ اسی گروپ نے مکمل کیا اور اسکور کیا، اور والدین کی مداخلت سے پہلے اور بعد میں اسکور ریکارڈ کیا گیا۔ کنٹرول گروپ میں، تربیتی پرچہ دوسرے سیشن کے دوران سوالنامہ ٢ کو پُر کرنے کے بعد پہنچایا گیا۔

نتائج: پہلے تشخیص میں، دو گروپوں میں بیداری کی سطح ($P=0.537$) میں کوئی خاص فرق نہیں تھا، لیکن انہوں نے دوسری تشخیص ($P<0.001$) کے بعد نمایاں فرق ظاہر کیا۔ دوسرے سوالنامے میں والدین کی بیداری کے اسکور میں مداخلت گروپ میں ٦,١٠ گنا اور کنٹرول گروپ میں ٨٣٤/٠ گنا اضافہ ہوا۔

نتیجہ: نتائج کے مطابق، پمفلٹ والدین کی فٹنو فیشل بیداری بڑھانے کا ایک اچھا ذریعہ ہیں۔

کلیدی الفاظ: آگاہی، دندان سازی، چہرہ، آرٹھوڈنٹکس، پمفلٹ

INTRODUCTION

In the 21st century, oral health literacy has been raised as a global issue. Unfortunately, many people have insufficient information about role of healthy primary dentition in preventing malocclusion and right time to see a dentist (1-3). Early diagnosis of some of dento-facial problems in children and orthodontic intervention at right time is important; because by this, the need to more complicated or longer orthodontic treatments or perhaps orthognathic surgeries at adulthood may be eliminated. Therefore, the knowledge and awareness of the community, especially the parents as the closest people to the child could lead to a responsibility and timely referral for intervention. This will have a positive effect on the psycho-social status of the child and will remove the economic burden of more difficult treatments from the family and the society.

Evidence has been showed that people remember only 20% of the physician's verbal explanations, which is raised to 50% by using written contents such as pamphlet.² Pamphlets are low-cost written educational information that studying them could be instructive.

Considering the importance of early diagnosis and intervention, and also necessity of educating the parents of children in this regard, limited studies have evaluated the effect of pamphlet and leaflet on the knowledge and awareness of parents or teachers in different areas. Oshagh et al. (4) and Momeni et al. (5) in 2 separate studies, evaluated the effect of pamphlet on the awareness of parents about orthodontics and oral habits in Shiraz city. Both studies revealed that pamphlet was significantly effective in raising the awareness. Arian et al. (6) reported that both verbal education and leaflet were impressive in increasing teachers' awareness about dental trauma, however in long-term follow-up, leaflet was more efficient. Studies of Ghaderi et al. in Shiraz city (7) and Adel Al-Asfour et al. in Kuwait (8) showed that educational leaflets raised significantly parents' information regarding tooth avulsion. Shojaeepour et al. (9) reported that in Kerman city, awareness of parents about oral health of children was acceptable but their performance was poor. Jyothsna vittoba et al. (2) founded that just 39% of parents in India had good awareness regarding importance of primary teeth.

Considering the important role of parents and their awareness in oral and dental health of children and the fact that cultural, indigenous, and socio-economic characteristics of different populations can lead to different research results, the present researchers aimed to do present study in Mashhad city. The purpose of the study was to evaluate the efficacy of an educational pamphlet on the awareness of parents of primary school children in about dento-facial characteristics.

METHODS

The protocol of this prospective Quasi-experimental study was approved by the research deputy of Mashhad University of Medical Sciences. Ethical approve was obtained from Ethics committee of Mashhad University of Medical Sciences (Ethical code number: IR.mums.sd.REC.1394.302). The study was performed in 2019 on a group of parents of

children educating in primary schools of Mashhad, Iran. Using Shiraz study (4) as a similar research, sample size was formulated and calculated. By cluster sampling method, seven schools were considered for each control and interventional group. Considering 20% probability of loss of samples, total sample size was calculated as 600 participants. Inclusion criteria: Willingness of school officials and parents to participate in the research. Exclusion criteria: Being under orthodontic treatment or having a history of orthodontic treatment of the child.

By random clustering method, 2 girl's schools were selected in each of 7 districts of Mashhad city, one as control and one as interventional (pamphlet) group. Totally 14 girl's schools were entered in the study. At first, 716 parents enrolled in the study. Finally, 601 parents continued their participation and fulfilled two questionnaires. Parents (mother or father) of the children were invited to a meeting in the school by a letter explaining the aim of the research. In the meeting, the purpose of the study was explained by co-worker of the study and the parents who desired to participate, fulfilled the questionnaire.

Questionnaire:

Validation process of the questionnaire was previously performed in a study at Shiraz University of Medical Sciences (4). In that study, reliability of the questionnaire was assessed by asking 20 participants to complete it twice with a 2-week interval. Cronbach alpha was used as a measure of reliability ($\alpha = 0.75$)

The questionnaire included demographic part and knowledge part. Demographic questions were about level of education of the parents, job, and number of family members, monthly income, and date of the child birth. The knowledge part included 13 questions about the level of parent's information regarding exfoliation time of primary teeth, normal occlusion, signs of malocclusion, oral habits, and right time of first orthodontic checkup.

Pamphlet:

The designed pamphlet contained information about meaning of orthodontics, signs of orthodontic treatment need, appropriate age of first orthodontic checkup and treatment, aim of orthodontic treatment, side-effects of not doing orthodontic treatment, eruption and exfoliation time of primary teeth, importance of primary teeth, signs of tooth decay, and importance of "6 years old" in dentistry.

Interventional Group:

In the first meeting, after collecting the completed questionnaire number 1, in interventional groups, the educational pamphlets were delivered to the parents. The parents were asked to study the pamphlet until the next session. Questionnaires were coded according the participant number. After one month, the next session was held. The second questionnaire was coded according to the previous session coding and was delivered to the respective participant. The second questionnaire was same as the first one. After collecting the fulfilled questionnaires, the parents asked their own questions and the orthodontist colleague

answered and explained all to them.

Control Group:

In the first meeting, the questionnaire number 1 was coded and parents fulfilled them. After one month, in the second session, participants received questionnaire number 2 which was coded according the previous time. After completing and collecting the questionnaires, the educational pamphlets were delivered to the parents and the orthodontist colleague answered the parents' questions about orthodontic treatment. The aim of pamphlet delivering in control group was to provide parental access to educational content and opportunities equal to the interventional group.

Statistical Analyses:

Coded data were processed using SPSS software package

(version 19). Each correct answer was given a positive score and each wrong answer a score of zero. In questions with more than one correct answer, a positive score was given for each correct item. The maximum possible score was 24. Descriptive statistics (mean and standard deviation (SD)) were calculated for different variables and questions. The statistical tests used were paired T-test, ANOVA, and Chi-square. The level of significance was $P < 0.05$.

RESULTS

Total of 601 subjects were participated in the study, 299 of them as interventional group and 302 cases as control group. The information about parents' level of education, job, monthly income, and family size, separately for 2 studied groups and their answer scores to the first and second questionnaires are presented in Table 1.

Groups		Number	First score Mean (SD)	Second score Mean (SD)	Difference of 1 st &2 nd scores Mean (SD)	
Intervention group	Fathers education	Elementary-middle school	103	7.8 (3.1)	13.28 (5.53)	5.47 (5.19)
		High school- Diploma	114	9.0 (3.1)	15.26 (5.30)	6.25 (5.19)
		Associate degree	17	9.7 (3.63)	15.23 (5.88)	5.52 (5.96)
		Bachelor- Master- Ph.D	60	10.41 (3.59)	17.60 (5.09)	7.18 (5.31)
		Total	294	8.91 (3.36)	15.04 (5.57)	6.12 (5.27)
	Mothers education	Elementary-middle school	82	7.46 (2.91)	12.23 (5.50)	4.76 (5.35)
		High school- Diploma	140	8.98 (3.36)	15.45 (5.20)	6.47 (5.20)
		Associate degree	18	9.61 (3.20)	16.38 (5.62)	6.77 (4.19)
		Bachelor- Master- Ph.D	53	10.66 (3.22)	17.90 (4.71)	7.24 (5.44)
		Total	293	8.90 (3.37)	15.05 (5.56)	6.15 (5.28)
	Fathers job	Private sector	156	8.95 (3.30)	14.92 (5.52)	6.32 (5.26)
		Unemployed- Deceased	8	8.37 (3.24)	10.87 (4.88)	2.50 (2.92)
		Public employee- Retired	72	9.98 (3.79)	16.52 (5.27)	6.54 (5.09)
		Manual worker	47	8.42 (2.77)	13.63 (5.67)	5.21 (5.57)
		Total	283	8.91 (3.39)	15.00 (5.56)	6.08 (5.25)
	Mothers job	Housewife	222	8.68 (3.28)	14.92 (5.57)	6.23 (5.16)
		Employee	25	10.36 (3.08)	16.2 (5.16)	5.92 (5.43)
	income	<2million tomans	216	8.60 (3.12)	14.50 (5.33)	5.90 (5.14)
		2-3 million tomans	55	9.09 (3.05)	16.90 (17.26)	7.81 (5.48)
		3million tomans>	15	12.60 (4.28)	17.26 (4.90)	4.66 (5.10)
		total	286	8.90 (3.28)	15.11 (5.49)	6.20 (5.25)
		Number of Family members	4 or less	222	9.31 (3.12)	15.50 (5.33)
	More than 4		60	7.60 (3.05)	13.58 (5.80)	5.98 (5.61)
Control group	Fathers education	Elementary-middle school	88	8.50 (2.96)	9.18 (3.38)	0.68 (3.2)
		High school- Diploma	108	9.05 (3.26)	9.87 (4.07)	0.81 (2.97)
		Associate degree	27	9.59 (3.42)	10.88 (3.04)	1.29 (3.09)
		Bachelor- Master- Ph.D	72	9.52 (3.06)	10.30 (4.21)	0.77 (3.11)
		Total	295	9.05 (3.15)	9.86 (3.85)	0.81 (3.08)

Table 1. Continued

Groups		Number	First score Mean (SD)	Second score Mean (SD)	Difference of 1 st & 2 nd scores Mean (SD)	
Control group	Mothers education	Elementary-middle school	84	8.21 (2.72)	9.18 (3.38)	0.39 (3.18)
		High school- Diploma	126	8.91 (3.01)	9.87 (4.07)	0.68 (2.54)
		Associate degree	23	9.69 (3.95)	10.88 (3.04)	0.95 (2.77)
		Bachelor- Master- Ph.D	64	10.17 (3.30)	10.30 (4.21)	1.35 (3.67)
		Total	297	9.04 (3.14)	9.86 (3.85)	0.76 (3.02)
	Fathers job	Private sector	168	9.09 (3.24)	9.90 (3.96)	0.80 (3.29)
		Unemployed- Deceased	8	7.87 (3.03)	10.37 (1.59)	2.50 (2.77)
		Public employee- Retired	79	9.18 (3.00)	10.11 (3.61)	0.92 (2.64)
		Manual worker	28	8.78 (2.75)	8.35 (3.55)	0.45 (2.11)
		Total	283	9.05 (3.09)	9.82 (3.80)	0.76 (3.03)
	Mothers job	Housewife	214	8.96 (2.95)	9.63 (3.49)	0.67 (2.81)
		employee	34	10.11 (3.92)	11.38 (5.26)	1.26 (4.51)
	Income	<2million tomans	188	8.67 (3.08)	9.37 (3.78)	0.70 (2.99)
		2-3 million tomans	72	9.58 (2.86)	10.54 (3.58)	0.95 (3.11)
		3milion tomans>	24	10.33 (3.74)	11.62 (4.62)	1.29 (3.97)
		Total	284	9.04 (3.13)	9.85 (3.87)	0.81 (3.11)
	Number of Family members	4 or less	203	9.20 (3.08)	9.87 (3.78)	0.67 (2.72)
		More than 4	80	8.67 (2.86)	9.45 (3.58)	0.77 (3.31)

Data analyses showed that parents' awareness about dentofacial problems had increased significantly in interventional group after the pamphlet study (Table 2). In the first assessment, two groups had no significant difference in awareness level ($P=0.537$), but they showed significant difference after the second evaluation ($P<0.001$).

Considering mothers' education level, after second questionnaire in interventional group, significant difference was shown between education level and awareness level ($P=0.005$), so mothers with higher level of education got more score increase after pamphlet study in comparison to control group.

Mothers' job (housewife versus employee) had no effect on score changes, neither in the interventional group nor in the control group. Also, there was a positive effect between

monthly income and awareness level, as participants with higher monthly income had higher awareness level and this effect was seen in both groups at both questionnaires' assessment ($P_{\text{int-q1}}<0.001$, $P_{\text{int-q2}}=0.004$, $P_{\text{cont-q1}}=0.01$, $P_{\text{cont-q2}}=0.006$).

Smaller families (≤ 4 members) in comparison to larger families (> 4 members) got higher awareness score in both groups but the difference was not statistically significant.

The number and percentage of correct answers to different 12 questions at the first and the second assessment in both interventional and control groups are presented in Table 3.

The question number 13 was about "references to get oral and dental information" which was a multi-answer question. The data are shown in Table 4.

Table 2. Comparison the awareness level of interventional and control groups at the first and the second questionnaire assessment

	Group	Number	Mean (SD)	P-value*
Score of first questionnaire	Intervention	299	8.87 (3.35)	0.537
	Control	302	9.03 (3.12)	
Score of second questionnaire	Intervention	299	14.98 (5.57)	0.000
	Control	302	9.87 (3.85)	
Difference of first and second questionnaire	Intervention	299	6.10 (5.27)	0.000
	Control	302	0.83 (3.10)	

* Independent T-test

Table 3. The number and percentage of correct answers to the questions of the first and the second questionnaire in interventional and control groups

Question	Group	Number (%) of correct answers in first questionnaire	Number (%) of correct answers in second questionnaire	Total
Importance of deciduous teeth	Intervention	261 (87%)	268 (89%)	299
	Control	251 (83%)	255 (84%)	302
Timing of eruption of permanent teeth	Intervention	47 (16%)	140 (47%)	299
	Control	34 (11%)	45 (15%)	302
Effect of oral habits on dentofacial growth	Intervention	4 (1%)	66 (22%)	298
	Control	3 (1)	14 (4%)	302
Signs of tooth decay	Intervention	5 (2%)	80 (27%)	297
	Control	10 (3%)	25 (8%)	302
Proper treatment for decayed deciduous tooth	Intervention	181 (60%)	227 (76%)	299
	Control	196 (65%)	213 (70%)	302
Best place for treatment of dentofacial problems	Intervention	108 (36%)	223 (75%)	299
	Control	109 (36%)	132 (44%)	302
Right age for first orthodontic visit of children	Intervention	95 (32%)	217 (73%)	299
	Control	96 (32%)	109 (36%)	302
Presence of space between deciduous teeth	Intervention	99 (33%)	190 (64%)	299
	Control	86 (29%)	109 (36%)	302
Occlusion in vertical dimension	Intervention	69 (23%)	175 (59%)	299
	Control	58 (19%)	64 (21%)	302
Occlusion in anterior-posterior dimension	Intervention	137 (46%)	231 (77%)	299
	Control	129 (43%)	132 (44%)	302
Side-effects of not doing orthodontic treatment	Intervention	12 (4%)	25 (8%)	299
	Control	10 (3%)	12 (4%)	302
Appropriate age to treat skeletal problems	Intervention	76 (25%)	179 (60%)	299
	Control	122 (40%)	136 (45%)	302

Table 4. Parents' references to get information

Reference	Group		Total
	Intervention	Control	
Radio	Number	13	20
	Percentage of Total	2.1%	3.3%
TV	Number	109	108
	Percentage of Total	18.1%	17.9%
Newspaper & Magazines	Number	25	27
	Percentage of Total	4.1%	4.4%
Health instructor	Number	129	132
	Percentage of Total	21%	21%
Other	Number	126	130
	Percentage of Total	20.9%	21.6%
Total	Number	298	302
	Percentage of Total	49.8%	50.2%

DISCUSSION

This research was performed with the aim of evaluating the effectiveness of a designed educational pamphlet about dentofacial characteristics, on the awareness level of parents of primary school children in Mashhad city. The focus of the study was on the parents, because they are the ones who make the final decision about whether or not to treat the orthodontic problem of their children. According to the results, the awareness level of parents in interventional group increased from 8.87 at the first evaluation to nearly 15 after studying the educational pamphlet, while in control cases who did not receive the pamphlet, scores showed a subtle increase from the first to the second assessment (9.03 versus 9.87). These findings revealed that parents had little information about importance of primary teeth and dentofacial problems of their children and the designed pamphlet was effective in raising the parental awareness.

One of the most similar researches is Oshagh et al. study.⁽⁴⁾ In line with present study, the pamphlet increased the parents' dental information. Also more educated parents showed further increase in awareness level.

Arikan et al. evaluated the effect of educational leaflet in comparison with verbal training on the awareness level of primary school teachers⁽⁶⁾. They concluded that leaflet is more effective than verbal training. The positive effect of educational brochure was in accordance with present study. Probably the reason is that study affects the long-term memory while verbal training effect is mainly on the short-term memory.

Review of other similar studies reveals that regardless of the study population or even the cultural and economic condition of the individuals, educational leaflet and pamphlet have been effective^(2,4,5,6,7,8). This effect is even seen in the medical community⁽¹⁰⁾. This issue re-emphasizes the role and importance of the educational brochures so that no group of people is needless of them.

In the current study, demographic characteristics of both control and interventional groups were close to each other (Table 1). Level of education of most parents were diploma or less. Approximately 25% of fathers were government employee and about 87% of mothers were housewife. Near 66% of participants had monthly income less than 2 million Tomans. More than 70% were families with 4 members or more. However it should be mentioned that despite cluster sampling from all seven urban areas, the percentage of participation in areas with lower economic level was better. In answering this question, "importance of preserving primary teeth", it can be said that more than 80% of answers were correct in both interventional and control groups. This is emphasized that most parents, before any special training, were aware of importance of primary teeth. But for the question "eruption timing of permanent dentition", in interventional group, only 16% answered correctly at first questionnaire while percentage of correct answers increased to 47% at second questionnaire. The awareness score in control group did not changed significantly. At the first questionnaire, only 1.3% of answers of interventional group to the question "effects of oral habits on the jaws and

dentition of children" was correct while after studying the pamphlet, at the second questionnaire, 22% answered correctly. According to table 3, very small percentage of parents were aware of oral habits. It seems that awareness raising is a necessity.

A detailed look to the table 3 reveals that awareness level in answering to the questions: "the best place to treat dento-facial problems", "right age of children to see a dentist for the first time", "existence of space between primary teeth", "occlusion in vertical dimension", "occlusion in anterior-posterior dimension", and "appropriate age to treat skeletal problems" was improved dramatically after studying the pamphlet in the interventional group. Apparently, in more specialized topics, pamphlet was more effective in increasing awareness level but more general topics like primary teeth were less affected.

A noteworthy point is that awareness about "future consequences of not treating dento-facial problems" was seriously low and even after studying the pamphlet, did not change much. This may show insufficiency of educational content of pamphlet in this field or lack of people attention to this important issue. It seems that people don't believe the mentioned consequences and increasing the awareness of the public community is needed.

Parents were reported that the most of their information regarding dentition were from radio and TV. This finding shows that radio and TV organizations could use these media optimally to improve general information regarding dento-facial problems and the necessity to treat at most appropriate time.

There are some limitations in the present study. One is that we did not request that students return the pamphlet before completion of the second questionnaire and parents may have been able to refer to the pamphlet. Also the study was evaluating the awareness level of one month after training. If the evaluation was done with a longer time interval, the results may be different. It is better to repeat the trainings in different ways or to make it available in such a way that parents can access the trainings whenever they want.

However, considering the role of virtual space and the hours that parents spend in virtual space, providing current trainings in virtual space can be more attractive and practical for parents.

According to the results, considering the limitation of current study, the designed educational pamphlet was effective in increasing parents' awareness about dentofacial characteristics of the children. The pamphlet was more effective in educating more specialized features in comparison with more general contents.

Ethical considerations

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. The ethics committee of Mashhad University of Medical Sciences approved this research, ethics code IR.mums.sd.REC.1394.302.

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