

Evaluation of Parent's Perception towards Early Orthodontic Treatment among Riyadh City; Saudi Arabia

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Abstract

Introduction and Objectives: Malocclusion is one of the most common dental issues in a human being after dental caries, gingival disease, and dental fluorosis. Early phase of treatment has a major role of growth modification and consequently correct skeletal occlusion to prevent future complications.

Aim: To evaluate the knowledge and awareness of parents towards early orthodontic intervention among Riyadh city, Saudi Arabia. Chi-square test was used to investigate associations between factors using SPSS Pc+ version 22.0 statistical software package (Chicago, IL, WA).

Materials and Methods: A cross-sectional study was conducted and distributed at a randomly selected (24) different primary schools (3 female schools and 3 males in each four district) among Riyadh, Saudi Arabia. A self-administrated questionnaire consists of 19 questions has been distributed among the primary school children from both genders, aged from (6 to 10 years) to be filled by their parents then recollected throw their teachers. All statistical analyses were set at a significant level of when P-value less than 0.05 ($P < 0.05$) using statistical program (SPSS) version 23.0 software (SPSS Inc., Chicago, IL, USA).

Results: A total of (2500) questionnaires were distributed and (1050) only were successfully recollected. The early orthodontic screening was statistically significant agreed by most of the participated parents ($P = 0.002$). A highly significant difference was obtained among younger parents who agree with the benefits of early orthodontic interference ($P < 0.001$). However, a significant difference between parent gender as females showed more awareness of early intervention benefits on their child skeletal growth ($P = 0.041$) and prevent dental trauma later in life ($P = 0.000$) comparing to male parents. The further significant difference found between income and educational level of parents and their perception toward early orthodontic intervention ($P = 0.000, 0.003$).

Conclusion: It was concluded that there is a strong relationship between parents age, gender as well as the level of awareness and early orthodontic interference for their children. Further awareness programs are required in order to educate the parents about the benefits of early orthodontic treatment among Riyadh city.

Keywords: Awareness; Knowledge; Malocclusion; Orthodontic Care; Parental Perception

Introduction

Various factors such as low hygiene standard may affect children's development, general health, well-being and education, however, oral health is a forgotten cause [1]. Worldwide many parents and children lack knowledge of the causes, occurrences, and preventions for most oral diseases. Malocclusion is one of the most common dental issues in a human being after dental caries, gingival disease, and dental fluorosis [2,3]. Malocclusion is a deviation of the ideal occlusion and it ranges from mild to considerable when compared to the accepted norm [4]. Maloccluded teeth may create psychosocial problems through impaired dentofacial aesthetics. Dentofacial features play a pivotal role in social integration and interpersonal communication [2,4]. Starting with orthodontic treatment has been controversial according to several etiology. Early orthodontic treatment usually begin during mixed or early dentition period. Early phase treatment has a major role of growth modification and consequently correct skeletal occlusion to prevent future complications [4].

The patient's self-perception is of substantial value in deciding treatment demand and co-operation, whilst parents are the most prevailing solitary factor in the motivation for orthodontic treatment [7]. Therefore, the aim of this study is to evaluate the knowledge and awareness of parents towards early orthodontic intervention and whether parents know the best time for their child to visit an orthodontist among Riyadh city, Saudi Arabia.

Materials and Methods

A prospective cross-sectional study was performed on selected school children's parents, whom are randomly selected, to investigate their awareness and perception of early orthodontic treatment. This study was conducted from June 2017 to Dec 2017 and after obtaining the research centre and ethical committee approval from Riyadh Elm University, Riyadh, Saudi Arabia (RC/IRB/2016/665).

The sample size calculation of this study was suggested and determined through using the OpenEpi website (openepi.com) to be representative. A self-administrated questionnaire was distributed in the schools of Riyadh, Saudi Arabia, in all four districts (North, South, East and West). Six schools (3 female and 3 male schools) as well as classes in those schools were randomly selected in each district. A total of (24) schools with children age group between 6 - 10 years were included in the study. The researchers distributed the questionnaire to the school, where teachers then distributed the questionnaire to the children. The children took the questionnaire home to their parents in order to complete the self-administered questionnaire. For the sake of randomization accuracy, personal information has been collected of each child's parents including name, gender and personal phone number by single investigator and to avoid patient selection bias and blinding achievement another investigator contacted each child's parents and confirm the data. It was returned to school once completed and then given to the researchers to analyse the information.

The exclusion criteria for distributing the questionnaire were any previous orthodontic treatment that was provided to the children age 6 - 10 years old, unwillingness of parents to participate in this study, non-returned questionnaire due to any reasons and incomplete answers to the questionnaires. The inclusion criteria were parents of all children age from 6 to 10 years old. The questionnaire components contained a structured self-administered questionnaire and was made exclusively for this study by one of the orthodontic faculty members at the Riyadh Elm University orthodontic department. It was also revised by another orthodontist from the same university.

The questionnaire was written in both languages English and Arabic and it consists of two parts. The first part contained all questions regarding the demographic characteristics of the parents i.e. age (25 - 34, 35 - 44, 45 - 54 and ≥ 50), gender, household income (low 2000 - 6000, moderate 6000 - 12000 and high > 12000 SR) and education (illiterate, primary school, intermediate and university). The second part consists of 14 closed ended questions on parents' awareness and perception of early orthodontic treatment. The questions were based on a 3-point Likert scale (agree, do not know, disagree). Parents were given a clear informed consent and it indicated the purpose of the study, the right to withdraw at any time with no liability towards the study team, the participants anonymity and strict confidentiality of the collected information.

The validity of the distributed questionnaire was examined by a random selection of 20 parents that are been referred to the orthodontic department of Riyadh Elm University. The parents were asked about the clarity of the questions and the length of the questionnaire. The results of the questionnaire were assessed for its validity, content validity ratio and content validity index by both a statistician and orthodontists. Descriptive data for categorical variables is to be expressed in numbers and percentage. Starting with orthodontic treatment has been controversial according to several etiologies. Early orthodontic treatment usually begins during a mixed or early dentition period. Early phase treatment has a major role in growth modification and consequently correct skeletal occlusion to prevent future complications [2].

All statistical analyses were set at a significant level of when P-value less than 0.05 ($P < 0.05$) using statistical program (SPSS) version 23.0 software (SPSS Inc., Chicago, IL, USA).

Results

Table 1 shows the socio-demographic characteristics of the study participants. Just over half the participants (54%, $n = 564$) reported to have heard about early (Phase I) orthodontic treatment (Figure 1). Table 2 and figure 2 shows the distribution of parental perception of orthodontic treatment. The majority strongly agree with item 14 (58.1%, $n = 607$) and item 2 (50.7%, $n = 530$). Table 3 shows the association between perception of orthodontic treatment and age groups. Two-way cross-tabulation and Chi-square test showed that there was a statistically significant association between age groups and items 2, 3, 7, 11, and 13 with 25 - 34 years old more likely to agree than other age groups ($p < 0.05$, $df = 3$). Table 4 shows the association between perception of orthodontic treatment and gender. There was a statistically significant association between gender and items 5, 8, and 9 with males more likely to agree than female ($p < 0.05$, $df = 1$).

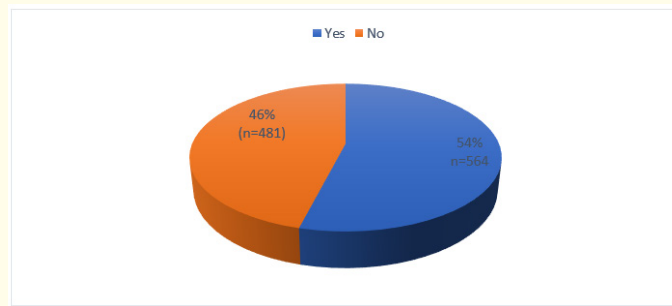


Figure 1: Heard about early (Phase I) orthodontic treatment.

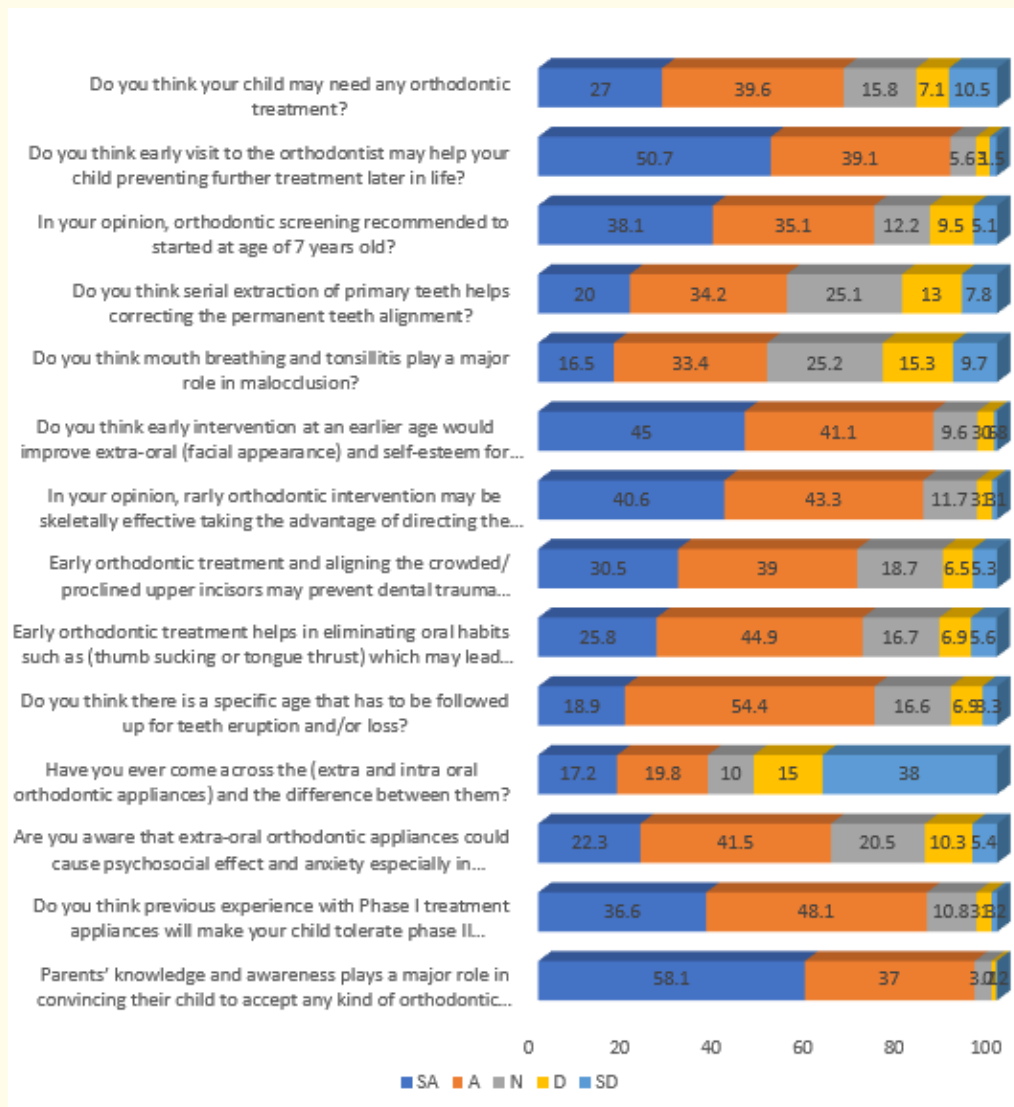


Figure 2: Response of parental perception of orthodontic treatment.

Variable		n	%
Age	25 - 34 Years	327	31.3
	35 - 44 Years	538	51.5
	45 - 54 Years	155	14.8
	≥ 55 Years	25	2.4
Gender	Male	346	33.1
	Female	699	66.9
Household income	Low (2000 - 6000 SR)	197	18.9
	Moderate (6000 - 12000 SR)	499	47.8
	High (> 12000 SR)	349	33.3
Education	Illiterate	15	1.4
	Primary school	48	4.6
	Intermediate	74	7.1
	Secondary school	159	15.2
	University	749	71.7

Table 1: Socio-demographic characteristics of the study participants.

Items		SA	A	N	D	SD
1. Do you think your child may need any orthodontic treatment?	n	282	414	165	74	110
	%	27	39.6	15.8	7.1	10.5
2. Do you think early visit to the orthodontist may help your child preventing further treatment later in life?	n	530	409	59	31	16
	%	50.7	39.1	5.6	3	1.5
3. In your opinion, Orthodontic screening recommended to started at age of 7 years old?	n	398	367	128	99	53
	%	38.1	35.1	12.2	9.5	5.1
4. Do you think serial extraction of primary teeth helps correcting the permanent teeth alignment?	n	209	357	262	136	81
	%	20	34.2	25.1	13	7.8
5. Do you think mouth breathing and tonsillitis play a major role in malocclusion	n	172	349	263	160	101
	%	16.5	33.4	25.2	15.3	9.7
6. Do you think early intervention at an earlier age would improve extra-oral (facial appearance) and self-esteem for your child?	n	470	429	100	38	8
	%	45	41.1	9.6	3.6	0.8
7. In your opinion, Early orthodontic intervention may be skeletally effective taking the advantage of directing the growth of developing jaws and enhancing their future relationship?	n	424	452	122	35	12
	%	40.6	43.3	11.7	3.3	1.1
8. Early orthodontic treatment and aligning the crowded/proclined upper incisors may prevent dental trauma during childhood?	n	319	408	195	68	55
	%	30.5	39	18.7	6.5	5.3
9. Early orthodontic treatment helps in eliminating oral habits such as (thumb sucking or tongue thrust) which may lead to major dental problem later in life if not treated?	n	270	469	175	72	59
	%	25.8	44.9	16.7	6.9	5.6
10. Do you think there is a specific age that has to be followed up for teeth eruption and/or loss?	n	197	569	173	72	34
	%	18.9	54.4	16.6	6.9	3.3
11. Have you ever come across the (extra and intra oral orthodontic appliances) and the difference between them?	n	180	207	104	157	397
	%	17.2	19.8	10	15	38
12. Are you aware that extra-oral orthodontic appliances could cause psychosocial effect and anxiety especially in childhood?	n	233	434	214	108	56
	%	22.3	41.5	20.5	10.3	5.4
13. Do you think previous experience with Phase I treatment appliances will make your child tolerate phase II treatment appliance much better?	n	382	503	113	34	13
	%	36.6	48.1	10.8	3.3	1.2
14. Parents’ knowledge and awareness plays a major role in convincing their child to accept any kind of orthodontic treatment?	n	607	387	39	10	2
	%	58.1	37	3.7	1	0.2

Table 2: Parental perception of orthodontic treatment.

Items	Response	25 - 34 Years		35 - 44 Years		45 - 54 Years		≥ 55 Years		Chi-square	df	p value
		n	%	n	%	n	%	n	%			
1. Do you think your child may need any orthodontic treatment?	Disagree	113	34.6%	174	32.3%	55	35.5%	7	1.098	1.098	3	0.778
	Agree	214	65.4%	364	67.7%	100	64.5%	18	72.0%			
2. Do you think early visit to the orthodontist may help your child preventing further treatment later in life?	Disagree	13	4.0%	80	14.9%	10	6.5%	3	12.0%	29.247	3	0.000*
	Agree	314	96.0%	458	85.1%	145	93.5%	22	88.0%			
3. In your opinion, Orthodontic screening recommended to started at age of 7 years old?	Disagree	63	19.3%	157	29.2%	52	33.5%	8	32.0%	14.962	3	0.002*
	Agree	264	80.7%	381	70.8%	103	66.5%	17	68.0%			
4. Do you think serial extraction of primary teeth helps correcting the permanent teeth alignment?	Disagree	151	46.2%	244	45.4%	70	45.2%	14	56.0%	1.135	3	0.769
	Agree	176	53.8%	294	54.6%	85	54.8%	11	44.0%			

5. Do you think mouth breathing and tonsillitis play a major role in malocclusion	Disagree	158	48.3%	285	53.0%	68	43.9%	13	52.0%	4.634	3	0.201
	Agree	169	51.7%	253	47.0%	87	56.1%	12	48.0%			
6. Do you think early intervention at an earlier age would improve extra-oral (facial appearance) and self-esteem for your child?	Disagree	49	15.0%	75	13.9%	19	12.3%	3	12.0%	0.739	3	0.864
	Agree	278	85.0%	463	86.1%	136	87.7%	22	88.0%			
7. In your opinion, Early orthodontic intervention may be skeletally effective taking the advantage of directing the growth of developing jaws and enhancing their future relationship?	Disagree	32	9.8%	108	20.1%	23	14.8%	6	24.0%	17.213	3	0.001*
	Agree	295	90.2%	430	79.9%	132	85.2%	19	76.0%			
8. Early orthodontic treatment and aligning the crowded/proclined upper incisors may prevent dental trauma during childhood?	Disagree	111	33.9%	148	27.5%	50	32.3%	9	36.0%	4.687	3	0.196
	Agree	216	66.1%	390	72.5%	105	67.7%	16	64.0%			
9. Early orthodontic treatment helps in eliminating oral habits such as (thumb sucking or tongue thrust) which may lead to major dental problem later in life if not treated?	Disagree	106	32.4%	153	28.4%	38	24.5%	9	36.0%	3.981	3	0.264
	Agree	221	67.6%	385	71.6%	117	75.5%	16	64.0%			
10. Do you think there is a specific age that has to be followed up for teeth eruption and/or loss?	Disagree	98	30.0%	132	24.5%	46	29.7%	3	12.0%	6.537	3	0.088
	Agree	229	70.0%	406	75.5%	109	70.3%	22	88.0%			
11. Have you ever come across the (extra and intra oral orthodontic appliances) and the difference between them?	Disagree	176	53.8%	356	66.2%	104	67.1%	22	88.0%	21.946	3	0.000*
	Agree	151	46.2%	182	33.8%	51	32.9%	3	12.0%			
12. Are you aware that extra-oral orthodontic appliances could cause psychosocial effect and anxiety especially in childhood?	Disagree	121	37.0%	191	35.5%	57	36.8%	9	36.0%	0.227	3	0.973
	Agree	206	63.0%	347	64.5%	98	63.2%	16	64.0%			
13. Do you think previous experience with Phase I treatment appliances will make your child tolerate phase II treatment appliance much better?	Disagree	27	8.3%	90	16.7%	38	24.5%	5	20.0%	23.935	3	0.000*
	Agree	300	91.7%	448	83.3%	117	75.5%	20	80.0%			
14. Parents’ knowledge and awareness plays a major role in convincing their child to accept any kind of orthodontic treatment?	Disagree	12	3.7%	31	5.8%	6	3.9%	2	8.0%	2.798	3	0.424
	Agree	315	96.3%	507	94.2%	149	96.1%	23	92.0%			

Table 3: Association between perception of orthodontic treatment and age groups.

*: Indicates Statistical Significance.

Items	Response	Male		Female		Chi-square	df	p value
		n	%	n	%			
1. Do you think your child may need any orthodontic treatment?	Disagree	126	36.4%	223	31.9%	2.12	1	0.145
	Agree	220	63.6%	476	68.1%			
2. Do you think early visit to the orthodontist may help your child preventing further treatment later in life?	Disagree	44	12.7%	62	8.9%	3.758	1	0.053
	Agree	302	87.3%	637	91.1%			
3. In your opinion, Orthodontic screening recommended to started at age of 7 years old?	Disagree	87	25.1%	193	27.6%	0.718	1	0.397
	Agree	259	74.9%	506	72.4%			
4. Do you think serial extraction of primary teeth helps correcting the permanent teeth alignment?	Disagree	171	49.4%	308	44.1%	2.677	1	0.102
	Agree	175	50.6%	391	55.9%			
5. Do you think mouth breathing and tonsillitis play a major role in malocclusion	Disagree	157	45.4%	367	52.5%	4.703	1	0.030*
	Agree	189	54.6%	332	47.5%			
6. Do you think early intervention at an earlier age would improve extra-oral (facial appearance) and self-esteem for your child?	Disagree	43	12.4%	103	14.7%	1.025	1	0.311
	Agree	303	87.6%	596	85.3%			
7. In your opinion, Early orthodontic intervention may be skeletally effective taking the advantage of directing the growth of developing jaws and enhancing their future relationship?	Disagree	53	15.3%	116	16.6%	0.278	1	0.598
	Agree	293	84.7%	583	83.4%			
8. Early orthodontic treatment and aligning the crowded/proclined upper incisors may prevent dental trauma during childhood?	Disagree	91	26.3%	227	32.5%	4.168	1	0.041*
	Agree	255	73.7%	472	67.5%			
9. Early orthodontic treatment helps in eliminating oral habits such as (thumb sucking or tongue thrust) which may lead to major dental problem later in life if not treated?	Disagree	75	21.7%	231	33.0%	14.451	1	0.000*
	Agree	271	78.3%	468	67.0%			
10. Do you think there is a specific age that has to be followed up for teeth eruption and/or loss?	Disagree	83	24.0%	196	28.0%	1.941	1	0.164
	Agree	263	76.0%	503	72.0%			
11. Have you ever come across the (extra and intra oral orthodontic appliances) and the difference between them?	Disagree	229	66.2%	429	61.4%	2.298	1	0.130
	Agree	117	33.8%	270	38.6%			
12. Are you aware that extra-oral orthodontic appliances could cause psychosocial effect and anxiety especially in childhood?	Disagree	116	33.5%	262	37.5%	1.569	1	0.210
	Agree	230	66.5%	437	62.5%			
13. Do you think previous experience with Phase I treatment appliances will make your child tolerate phase II treatment appliance much better?	Disagree	50	14.5%	110	15.7%	0.295	1	0.587
	Agree	296	85.5%	589	84.3%			
14. Parents' knowledge and awareness plays a major role in convincing their child to accept any kind of orthodontic treatment?	Disagree	16	4.6%	35	5.0%	0.073	1	0.787
	Agree	330	95.4%	664	95.0%			

Table 4: Association between perception of orthodontic treatment and gender.

*: Indicates Statistical Significance.

Item	Response	Low (2000 - 6000SR)		Moderate (6000 - 12000 SR)		High (> 12000 SR)		Chi-square	df	p value
		n	%	n	%	n	%			
1. Do you think your child may need any orthodontic treatment?	Disagree	55	27.9%	170	34.1%	124	35.5%	3.473	2	0.176
	Agree	142	72.1%	329	65.9%	225	64.5%			
2. Do you think early visit to the orthodontist may help your child preventing further treatment later in life?	Disagree	16	8.1%	41	8.2%	49	14.0%	8.73	2	0.013*
	Agree	181	91.9%	458	91.8%	300	86.0%			
3. In your opinion, Orthodontic screening recommended to started at age of 7 years old?	Disagree	43	21.8%	107	21.4%	130	37.2%	29.212	2	0.000*
	Agree	154	78.2%	392	78.6%	219	62.8%			
4. Do you think serial extraction of primary teeth helps correcting the permanent teeth alignment?	Disagree	78	39.6%	208	41.7%	193	55.3%	19.151	2	0.000*
	Agree	119	60.4%	291	58.3%	156	44.7%			
5. Do you think mouth breathing and tonsillitis play a major role in malocclusion	Disagree	95	48.2%	235	47.1%	194	55.6%	6.284	2	0.043*
	Agree	102	51.8%	264	52.9%	155	44.4%			
6. Do you think early intervention at an earlier age would improve extra-oral (facial appearance) and self-esteem for your child?	Disagree	31	15.7%	58	11.6%	57	16.3%	4.418	2	0.110
	Agree	166	84.3%	441	88.4%	292	83.7%			

7. In your opinion, Early orthodontic intervention may be skeletally effective taking the advantage of directing the growth of developing jaws and enhancing their future relationship?	Disagree	31	15.7%	73	14.6%	65	18.6%	2.452	2	0.293
	Agree	166	84.3%	426	85.4%	284	81.4%			
8. Early orthodontic treatment and aligning the crowded/ proclined upper incisors may prevent dental trauma during childhood?	Disagree	58	29.4%	140	28.1%	120	34.4%	3.996	2	0.136
	Agree	139	70.6%	359	71.9%	229	65.6%			
9. Early orthodontic treatment helps in eliminating oral habits such as (thumb sucking or tongue thrust) which may lead to major dental problem later in life if not treated?	Disagree	54	27.4%	131	26.3%	121	34.7%	7.438	2	0.024*
	Agree	143	72.6%	368	73.7%	228	65.3%			
10. Do you think there is a specific age that has to be followed up for teeth eruption and/or loss?	Disagree	59	29.9%	120	24.0%	100	28.7%	3.536	2	0.171
	Agree	138	70.1%	379	76.0%	249	71.3%			
11. Have you ever come across the (extra and intra oral orthodontic appliances) and the difference between them?	Disagree	142	72.1%	297	59.5%	219	62.8%	9.569	2	0.008*
	Agree	55	27.9%	202	40.5%	130	37.2%			
12. Are you aware that extra-oral orthodontic appliances could cause psychosocial effect and anxiety especially in childhood?	Disagree	81	41.1%	177	35.5%	120	34.4%	2.676	2	0.262
	Agree	116	58.9%	322	64.5%	229	65.6%			
13. Do you think previous experience with Phase I treatment appliances will make your child tolerate phase II treatment appliance much better?	Disagree	30	15.2%	66	13.2%	64	18.3%	4.14	2	0.126
	Agree	167	84.8%	433	86.8%	285	81.7%			
14. Parents’ knowledge and awareness plays a major role in convincing their child to accept any kind of orthodontic treatment?	Disagree	13	6.6%	19	3.8%	19	5.4%	2.729	2	0.255
	Agree	184	93.4%	480	96.2%	330	94.6%			

Table 5: Association between perception of orthodontic treatment and income levels.

*: Indicates Statistical Significance.

Items	Response	Illiterate		Primary		Intermediate		Secondary		University		Chi-square	df	p value
		n	%	n	%	n	%	n	%	n	%			
1. Do you think your child may need any orthodontic treatment?	Disagree	3	20.0%	15	31.3%	18	24.3%	51	32.1%	262	35.0%	5.017	4	0.286
	Agree	12	80.0%	33	68.8%	56	75.7%	108	67.9%	487	65.0%			
2. Do you think early visit to the orthodontist may help your child preventing further treatment later in life?	Disagree	2	13.3%	7	14.6%	6	8.1%	19	11.9%	72	9.6%	2.342	4	0.673
	Agree	13	86.7%	41	85.4%	68	91.9%	140	88.1%	677	90.4%			
3. In your opinion, Orthodontic screening recommended to started at age of 7 years old?	Disagree	4	26.7%	19	39.6%	20	27.0%	35	22.0%	202	27.0%	5.87	4	0.209
	Agree	11	73.3%	29	60.4%	54	73.0%	124	78.0%	547	73.0%			
4. Do you think serial extraction of primary teeth helps correcting the permanent teeth alignment?	Disagree	3	20.0%	22	45.8%	21	28.4%	68	42.8%	365	48.7%	16.25	4	0.003*
	Agree	12	80.0%	26	54.2%	53	71.6%	91	57.2%	384	51.3%			
5. Do you think mouth breathing and tonsillitis play a major role in malocclusion	Disagree	9	60.0%	27	56.3%	25	33.8%	81	50.9%	382	51.0%	9.482	4	0.050*
	Agree	6	40.0%	21	43.8%	49	66.2%	78	49.1%	367	49.0%			

6. Do you think early intervention at an earlier age would improve extra-oral (facial appearance) and self-esteem for your child?	Disagree	4	26.7%	14	29.2%	11	14.9%	13	8.2%	104	13.9%	15.73	4	0.003*
	Agree	11	73.3%	34	70.8%	63	85.1%	146	91.8%	645	86.1%			
7. In your opinion, Early orthodontic intervention may be skeletally effective taking the advantage of directing the growth of developing jaws and enhancing their future relationship?	Disagree	3	20.0%	13	27.1%	11	14.9%	20	12.6%	122	16.3%	5.993	4	0.200
	Agree	12	80.0%	35	72.9%	63	85.1%	139	87.4%	627	83.7%			
8. Early orthodontic treatment and aligning the crowded/proclined upper incisors may prevent dental trauma during childhood?	Disagree	5	33.3%	13	27.1%	19	25.7%	38	23.9%	243	32.4%	5.741	4	0.219
	Agree	10	66.7%	35	72.9%	55	74.3%	121	76.1%	506	67.6%			
9. Early orthodontic treatment helps in eliminating oral habits such as (thumb sucking or tongue thrust) which may lead to major dental problem later in life if not treated?	Disagree	3	20.0%	17	35.4%	21	28.4%	33	20.8%	232	31.0%	8.145	4	0.086
	Agree	12	80.0%	31	64.6%	53	71.6%	126	79.2%	517	69.0%			
10. Do you think there is a specific age that has to be followed up for teeth eruption and/or loss?	Disagree	4	26.7%	17	35.4%	18	24.3%	29	18.2%	211	28.2%	8.721	4	0.068
	Agree	11	73.3%	31	64.6%	56	75.7%	130	81.8%	538	71.8%			
11. Have you ever come across the (extra and intra oral orthodontic appliances) and the difference between them?	Disagree	11	73.3%	33	68.8%	48	64.9%	102	64.2%	464	61.9%	1.922	4	0.750
	Agree	4	26.7%	15	31.3%	26	35.1%	57	35.8%	285	38.1%			
12. Are you aware that extra-oral orthodontic appliances could cause psychosocial effect and anxiety especially in childhood?	Disagree	10	66.7%	19	39.6%	27	36.5%	55	34.6%	267	35.6%	6.548	4	0.162
	Agree	5	33.3%	29	60.4%	47	63.5%	104	65.4%	482	64.4%			
13. Do you think previous experience with Phase I treatment appliances will make your child tolerate phase II treatment appliance much better?	Disagree	3	20.0%	7	14.6%	10	13.5%	23	14.5%	117	15.6%	0.601	4	0.963
	Agree	12	80.0%	41	85.4%	64	86.5%	136	85.5%	632	84.4%			
14. Parents’ knowledge and awareness plays a major role in convincing their child to accept any kind of orthodontic treatment?	Disagree	0	0.0%	2	4.2%	6	8.1%	7	4.4%	36	4.8%	2.57	4	0.632
	Agree	15	100.0%	46	95.8%	68	91.9%	152	95.6%	713	95.2%			

Table 6: Association between perception of orthodontic treatment and educational levels.

* Indicates Statistical Significance

Association between perception of orthodontic treatment and income levels showed that there was a statistically significant association between income level and items 2, 3, 4, 5, 9, and 11 with moderate income level (6000 - 12000 SR) more likely to agree than other income level groups ($p < 0.05$, $df = 2$). There was a statistically significant association between educational level and items 4, 5, and 6 with University level more likely to agree than other educational level groups ($p < 0.05$, $df = 4$). Table 7 shows the association between questionnaire items and socio-demographic variables.

Items	Response	n	%	Age	Gender	Income	Education
				p value	p value	p value	p value
1. Do you think your child may need any orthodontic treatment?	Disagree	349	33.4%	0.778	0.145	0.176	0.286
	Agree	696	66.6%				
2. Do you think early visit to the orthodontist may help your child preventing further treatment later in life?	Disagree	106	10.1%	0.000*	0.053	0.013*	0.673
	Agree	939	89.9%				
3. In your opinion, Orthodontic screening recommended to started at age of 7 years old?	Disagree	280	26.8%	0.002*	0.397	0.000*	0.209
	Agree	765	73.2%				
4. Do you think serial extraction of primary teeth helps correcting the permanent teeth alignment?	Disagree	479	45.8%	0.769	0.102	0.000*	0.003*
	Agree	566	54.2%				
5. Do you think mouth breathing and tonsillitis play a major role in malocclusion?	Disagree	524	50.1%	0.201	0.030*	0.043*	0.05
	Agree	521	49.9%				
6. Do you think early intervention at an earlier age would improve extra-oral (facial appearance) and self-esteem for your child?	Disagree	146	14.0%	0.864	0.311	0.11	0.003*
	Agree	899	86.0%				
7. In your opinion, Early orthodontic intervention may be skeletally effective taking the advantage of directing the growth of developing jaws and enhancing their future relationship?	Disagree	169	16.2%	0.001*	0.598	0.293	0.2
	Agree	876	83.8%				
8. Early orthodontic treatment and aligning the crowded/proclined upper incisors may prevent dental trauma during childhood?	Disagree	318	30.4%	0.196	0.041*	0.136	0.219
	Agree	727	69.6%				
9. Early orthodontic treatment helps in eliminating oral habits such as (thumb sucking or tongue thrust) which may lead to major dental problem later in life if not treated?	Disagree	306	29.3%	0.264	0.000*	0.024*	0.086
	Agree	739	70.7%				
10. Do you think there is a specific age that has to be followed up for teeth eruption and/ or loss?	Disagree	279	26.7%	0.088	0.164	0.171	0.068
	Agree	766	73.3%				
11. Have you ever come across the (extra and intra oral orthodontic appliances) and the difference between them?	Disagree	658	63.0%	0.000*	0.13	0.008*	0.75
	Agree	387	37.0%				
12. Are you aware that extra-oral orthodontic appliances could cause psychosocial effect and anxiety especially in childhood?	Disagree	378	36.2%	0.973	0.21	0.262	0.162
	Agree	667	63.8%				
13. Do you think previous experience with Phase I treatment appliances will make your child tolerate phase II treatment appliance much better?	Disagree	160	15.3%	0.000*	0.587	0.126	0.963
	Agree	885	84.7%				
14. Parents’ knowledge and awareness plays a major role in convincing their child to accept any kind of orthodontic treatment?	Disagree	51	4.9%	0.424	0.787	0.255	0.632
	Agree	994	95.1%				

Table 7: Association between questionnaire items and socio-demographic variables.

* Indicates Statistical Significance.

Discussion

Dentofacial characteristics play an imperative role in interpersonal communication and social integration [5]. The diversity of cultural, social, personal and psychological elements affect the self-perception of dental appearance and the intention to endure orthodontic treatment [6]. The patient’s self-perception is of substantial value in deciding treatment demand and co-operation, whilst parents are the most prevailing solitary factor in the motivation for orthodontic treatment [7]. The aim of the current study was to evaluate the knowledge and awareness of parents towards early orthodontic intervention and whether parents know the best time for their child to visit an orthodontist.

Over half the participants have heard about early (Phase I) orthodontic treatment. The majority reported that orthodontic screening recommended being started at age of 7 years old. This finding was in line with a previous study which reported that most parents thought 7 - 8 years to be the best age for starting orthodontic treatment and also see to accept the concept of early treatment [4]. In concordance to this, another study revealed that only one-third of parents were conscious of this recommended age for the first orthodontist visit [1]. On the other hand, the level of dental awareness in parents of pre-school children in the Indian milieu which exposed a meager level of dental awareness in those parents [8].

Parents emerge to make an ultimate decision about treatment, even though they may have diverse motives for their kids [9]. In the current study, a vast majority agreed that parents' knowledge and awareness plays a major role in convincing their child to accept any kind of orthodontic treatment. This finding was consistent with a previous survey which reported parents are more likely to approve for orthodontic care in principle and to perceive a need for it in their child. A parental history of orthodontic treatment and a determination to insist on their child's co-operation with orthodontic treatment had a significant association [10]. Parents reported greater motivation for their children to have orthodontic treatment. Furthermore, it was reported that the patient's treatment motivation, the more they cooperated with their orthodontists' treatment recommendations [3].

Cognizance of orthodontic treatment need is multifactorial and prejudiced to a greater or lesser degree by several facets [7]. There was a significant association between young parents' (25 - 34 years) and their perceptions toward orthodontic treatment of their children. The findings of gender difference in parents' perceptions towards orthodontic treatment are in contrary with previous research [11]. The present study revealed that parents' gender and age showed a significant association with their perceptions. On the other hand, variables such as age and gender did not find any statistically significant dissimilarity when allied with the desire for orthodontic treatment in a previous study [6]. Similarly, another study reported gender was not an influencing factor [7].

It was also noted in the present study that, the benefits of a high educational level and high-income level in improving parents' perception which was is consistent with previous studies [1,2,13]. A previous study reported a markedly higher level of acceptable attitude and knowledge were seen in high social class. The score of attitude was substantially elevated among highly educated people. Their study exhibited noteworthy impacts of higher socioeconomic and educational status on parents' attitude and significant effect of higher socioeconomic status on parents' knowledge [5].

This study demonstrated the beneficial effects of high educational and social class in improving of parents' attitude in Saudi Arabia. Although a majority of the parents' perception towards early orthodontic treatment is in line with the previous research, one of the limitations of this survey is that since this study was conducted in only one city of Saudi Arabia. Hence, the findings of the study may not be generalized to the general population. Another limitation was that it is unable to ensure that parents completed the questionnaire without getting help from other sources. Future studies are recommended to evaluate parents' attitude and compare it with their knowledge about early childhood orthodontic treatments including systematic review to refer to.

Conclusion

Within the limitation of the study, it can be concluded higher socioeconomic and educational status on parents' has a significant impact on attitude on parents' knowledge. Parents' gender and age also showed significant association with their perceptions. The findings of this study may contribute the parents and healthcare authorities for implication towards early orthodontic treatment. The findings could also help the orthodontist when developing the treatment plan to ensure the best possible treatment.

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Conflicts of Interest

There are no conflicts of interest.

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