ABSTRACT
The study aimed to identify the level of parent’s knowledge and attitude towards early orthodontic treatment for their children. The study relied on quantitative method and adopted descriptive and analytical approach, depending on (Likert Scale) questionnaire which was applied to a sample composed of (196) parents of orthodontic children in dentists’ clinics in Amman-Jordan.

The results indicated that there is moderate level of knowledge and attitude among Jordanian parents towards early orthodontic treatment for their children. The study showed that there is a significant difference in parent’s knowledge towards early orthodontic treatment due to education level. According to the results, the study recommended that parents should make an early orthodontic examination when their children reach the age of 5-7 years, and conduct early orthodontic treatment if they need. The study also recommended the need to increase the awareness of the importance of early orthodontic treatment in Jordan and to include orthodontic in health insurance contracts for companies in Jordan.

KEYWORDS
Orthodontics, Early Orthodontic treatment, Children orthodontic.

INTRODUCTION
Orthodontics is a branch of dentistry related to orthodontics to improve smile and oral health. The orthodontic treatment of problems caused by tooth curvature or congestion and the projection of the upper jaw and poor position of the jaw as well as disorders of jaw joints.1

The major of orthopedics and oral surgery is a method of prevention, diagnosis and correction of malocclusion due to skeletal and neuromuscular abnormalities related to the development of bony teeth. Orthodontic care, whether due to professional assessment or patient self-perception, has beneficial effects, including aesthetic improvement, functional improvement, and psychosocial well-being.2

Early orthodontic treatment is a precursor to the traditional treatment protocol in which braces and bands that are placed on permanent teeth. This early treatment begins during either primary or transitional teeth to intercept malocclusion in a way that ultimately leads to a better and more stable result than if treatment were initiated later. Many doctors offering early treatment aim to reduce the time and complexity of treating fixed devices.3

DaCosta et al.4 showed that early orthodontic treatment seeks to improve both psychosocial development and chewing functions in child. Among the early treatment indicators are some cross-shots that hinder the function, an anterior beam that leads to painful obstruction and damage to the lower anterior teeth and to opening the anterior organelles causing cosmetic distress as well as chewing dysfunction. Prevention of trauma in the front teeth of individuals with acute category II injuries associated with concomitant overdoses is an indicator of early orthodontic treatment.

Several studies have addressed the key role of parents in managing their children’s orthodontics. Studies have shown that parents choose orthodontic treatment to enhance their children’s oral health and functions.2 Thus, parents’ knowledge and attitudes towards early orthodontic treatment of their children are of great value.

STUDY PROBLEM
The problem with the study is that many parents do not realize that their children need early orthodontic treatment. On the other hand, the researcher has noticed that some parents know that their children need orthodontics, but they do not do any orthodontic treatment for them. Thus, dental developmental disorders appear; so it is noted that many children suffer from teeth divergence or convergence or teeth growth inconsistently, leading to problems with their teeth and jaw in the future. Thus, the problem of the study is determined in answering the following questions:

• What is the level of parent’s knowledge towards early orthodontic treatment for their children?
• What is the parents’ attitude towards early orthodontic treatment for their children?
• Are there differences in parent’s knowledge towards early orthodontic treatment according to parent’s (Age, Education qualification)?
• Are there differences in Parent’s Attitude towards early orthodontic treatment according to parent’s (Age, Education qualification)?

OBJECTIVES OF THE STUDY
The study seeks to achieve the following objectives:
1. Identify the level of parent’s knowledge and attitude towards early orthodontic treatment for their children.
2. Clarify the differences in parent’s knowledge towards early orthodontic treatment according to parent’s (Age, Education qualification).
3. Clarify the differences in parent’s attitude towards early orthodontic treatment according to parent’s (Age, Education qualification).

ORTHODONTICS
The orthodontic process involves fixing braces, clamps, or devices on the teeth, which causes a little pressure on them to move them to their correct position. The process of moving teeth may take months to years. The goal of orthodontics is to rearrange teeth and make them straight. As well as orthodontic improves the efficiency of eating and chewing, and improves the ability to speak. Some find that a beautiful smile increases a person’s self-confidence.3

The definition of orthodontics can be summarized as a process aimed at creating or establishing functional or ideal relationships taking into account aesthetic balance and ensuring the long-term stability of treatment outcomes by adjusting the relationship between teeth and facial bones by applying mechanical or functional forces.6

Sharma et al.7 indicated that age-related changes of jaws and soft tissue profile are important for both orthodontists and general dentists.8

Orthodontists prefer to see the patient between the ages of 7-10 years. This does not mean that orthodontic treatment should start at an early age, but early examination can show some cases in which rapid intervention is preferred at an early age to avoid worsening the situation.9

Aging is not a major barrier to orthodontic treatment, as adult treatment accounts for almost a quarter of patients in orthodontic clinics. In addition, the treatment of adults takes longer than children as a result of increasing the severity of the jawbone with age, which delays the movement of teeth compared with children.9

One of the most commonly used orthodontic tools is orthodontic wires, especially stainless steel, because of its mechanical, plastic and economic properties that are superior to other orthodontic wires.10

Understanding of orthodontic patient’s dento-orofacial genetics and their impact on diagnosis, prevention, and therapy become integral parts of health care. Disturbances during the early tooth developmental stages may result in congenital absence of one or more teeth.11

Throughout the history of orthodontics, indicators have been developed to record malocclusion. Bourzgui12 demonstrated that most of these indicators should be developed for the following objectives:
• Classifying malocclusion in order to allow and facilitate communication between professionals.
• Compiling a database to facilitate epidemiological studies.
• Classifying cases according to the complexity of their treatment
• Identifying treatment needs and priorities.
• Determining aesthetic aspects that affect treatment need.

In addition, we should not forget that orthodontic treatment needs some of the indicators, or at least most indicators, designed to prioritize treatment, or in other words, to select potential patients who would benefit more from orthodontic treatment in a particular health service system.

Nordqvist13 showed that good dental hygiene is important before starting orthodontics, because when devices are placed on the teeth, food molecules are likely to decompose, requiring the individual to brush his teeth more and more to prevent tooth decay during treatment. Without good dental health practices, there is a risk of tooth decay during treatment. Orthodontics may also recommend avoiding soft drinks, sugary snacks and other items that can lead to tooth decay.

In general, orthodontics is realized among people as the healthiest and most cost-effective way of obtaining a beautiful smile and stable bite for them for the long term.14

EARLY ORTHODONTIC TREATMENT
Early orthodontic treatments are remedial procedures performed on mixed teeth for the purpose of preventing, intercepting or correcting a particular orthodontic problem. In addition, early orthodontic treatment is considered a removable or fixed intervention for devices in the early mixed early stages (first permanent molars and incisors), or in mid-period (pre-transition period, before the first premolars and permanent mandibular canines).15

Prabhacker et al.16 defined early treatment as “a treatment that initiated in primary or mixed dentistry to promote dental and skeletal growth before the appearance of permanent teeth.”

Grippaudo et al.17 pointed out that early orthodontic treatments are performed at the initial dental stage in order to reduce the length and intensity of orthodontic treatments with conventional fixed devices. Early
orthodontic treatments are particularly effective and desirable when requesting correction of skeletal injuries in young children, since the more stable results are achievable, and less permanent extractions and the length of orthodontic treatments in permanent dentistry with a lower risk of gum disease after treatment are needed.

The benefits of early orthodontic treatment include reducing severe bump, correcting skeletal deformity, reducing extreme stress on the jet, creating space for permanent dental ox, modifying abnormal muscle formation, and reducing the second stage of treatment.16

In addition, Lahcen & Laila15 explained that early treatment can bring many benefits, including better use of the patient’s growth potential, reducing the need for orthopedic surgery, reducing the risk of adverse effects of iatrogenic origin, better patient compliance, and achieving better and more stable results. The disadvantages of this approach are increasing the cost and duration of comprehensive patient care, and increasing the risk of caries and fatigue in both children and parents.

RELATED LITERATURE

The study of Pooja et al.18 aimed to investigate the awareness and willingness towards orthodontic treatment among 11-14 years old Municipal School children of Ahmedabad, India. A short survey including 150 municipal school children of Ahmedabad was carried out by Department of Orthodontics and Dentofacial Orthopaedics, AMC Dental College and Hospital, Ahmedabad, to assess awareness and willingness towards orthodontic treatment in low income category. The study results showed that there is class II maloclusion with forwardly placed teeth (21.3%), followed by Class I malocclusions with crowding (20.7%) that were found to be maximally aware of their malocclusion. Lack of time (36.9%) and parents’ denial (16.7%) were the main obstacles that resulted in unwillingness to undergo orthodontic treatment. There was a statistically significant correlation between the obstacles causing reluctance towards orthodontic treatment and education of the mother.

The study of Sruthi19 aimed to assess the knowledge, awareness, and attitude about the importance of undergoing early orthodontic treatment, functional and myofunctional appliance therapy, and acceptance among public. Questionnaires with 15 questions were printed and distributed among patients and general public; their responses regarding the importance of undergoing early orthodontic treatment, functional and myofunctional appliance therapy were recorded. The study results showed that the knowledge, awareness, and attitude about the importance of undergoing early orthodontic treatment, functional and myofunctional appliance therapy, and acceptance among public are necessary for proper timely care and efficient treatment.

The study of Mane et al.20 aimed to know that the attitudes and perceptions toward dental appearance differ among populations and individuals. There is a paucity of data regarding awareness of orthodontic treatment among village population in the Indian context. A questionnaire consisting of twenty questions was distributed to random 500 patients visiting the School of Dental Sciences, Karad, Maharashtra, India, in the age group of 18–25 years, who may or may not have taken orthodontic treatment. Simple descriptive statistics were applied to describe the study variables. The Chi-square test procedure was used to compare means for two groups. The study results showed that there is significant difference between the awareness of orthodontic treatment in males and females. The study concluded that people in rural areas comparatively lack awareness regarding advances and various techniques in orthodontic treatment. Although people are concerned regarding their facial appearance, lack of awareness regarding this field makes them unapproachable to an orthodontist.

The study of Moshkelgosha et al.7 aimed to investigate an important issue among parents of school children aged 7 and 8 in four different districts of Shiraz, south of Iran that may improve dental health policies and services to foster early childhood orthodontic treatment and establish better utilization of resources. This cross-sectional study, which was conducted in Shiraz, city of Iran, comprised 1600 primary school children aged 7 and 8 years old from 16 schools in the four districts of Shiraz. Self-administered questionnaires, giving scores to parental knowledge and attitude towards early orthodontic treatment, were designed and distributed to the children to deliver them to their parents. The study results showed significant effect of higher social class on the parents’ knowledge and attitude and beneficial impact of higher educational level on parents’ attitude. The parents, who were former orthodontic patient, were more concerned about their children’s dentofacial health.

The study of Baheti & Toshniwal21 aimed to evaluate the awareness towards the orthodontic treatment in children of age group 12 to 15 years along with their parents in the Loni, Maharashtra. The sample consisted of 840 subjects (420 children and their parents) that were subdivided in four groups according to their socioeconomic status of schools. The outcome of interest was attitude towards orthodontic treatment; data were collected using a standardized questionnaire. The study results showed that there is a significant difference between mean score s in relation to attractiveness in all schools under study when compared to parents versus children (p<0.05). Most children and parents of all groups seem to know about only fixed orthodontic devices. Knowledge about orthodontics and the facts involved will be more in high-income groups than low-income groups and there is a need to raise awareness in low-income groups.
**RESEARCH METHODOLOGY**

This study has been based on the quantitative method. The study adopted an inductive approach to conduct theory from the data collected. To determine this, the study followed a descriptive and analytical approach to describe parents’ knowledge and attitude towards early orthodontic treatment of their children.

**MEASURE**

The study depended on (Likert Scale) questionnaire in order to answer the items based on these values: Strongly Agree: (5) points, Agree: (4) points, Neutral: (3) points, Disagree: (2) points, Strongly Disagree: (1) point. The length category = (The upper limit of the alternative - the minimum of the alternative) / Number of levels. = (5 -1) / 3 = 1.33.

**Table 1** The Distribution Level of Importance

<table>
<thead>
<tr>
<th>Level of the importance</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 2.33</td>
<td>Low</td>
</tr>
<tr>
<td>2.33 - 3.66</td>
<td>Medium</td>
</tr>
<tr>
<td>3.67 – 5</td>
<td>High</td>
</tr>
</tbody>
</table>

The questionnaire contains a cover letter and two sections as follows:

**Section I:** Demographic characteristics.

**Section II:** Questions related to parent’s knowledge and attitude towards early orthodontic treatment for their children.

**Section III:** Questions related to parent’s knowledge and attitude towards early orthodontic treatment for their children.

**RESEARCH POPULATION AND SAMPLE**

The total population includes all parents of orthodontic children in dentists’ clinics in Amman-Jordan. The study has been applied on a sample consisting of 230 persons of the study population in different areas in Amman city, Jordan.

A total of 230 questionnaires were distributed, 202 questionnaires were collected, and 6 questionnaires have been neglected due to uncompleted answers. Thus, 196 questionnaires data were suitable to be tested.

**SAMPLE CHARACTERISTICS**

Table 2 showed that the highest percentage was for females (%53.6) whereas the percentage of males was (%46.4).

Table 2 also showed that the highest age percentage for the age group was 35- to less than 45 years which is (%42.9), followed by the age group of 25- less than 35 years which is (%42.3), then the ages less than 25 years which reached (%12.8) and finally the age group of 45-less than 55 years which reached (%2.0).

In addition, the highest qualification percentage was for Bachelor Degree which is (%80.1), followed by Diploma which is (%11.7), then for Master Degree which is (%6.1), and finally for PhD Degree which is (%2.0).

**Table 2** Demographic variables of the Samples

<table>
<thead>
<tr>
<th>Samples Characteristics</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong> (no.201)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>91</td>
<td>46.4</td>
</tr>
<tr>
<td>Female</td>
<td>105</td>
<td>53.6</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>100</td>
</tr>
<tr>
<td><strong>Age</strong> (no.201)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 25 years</td>
<td>25</td>
<td>12.8</td>
</tr>
<tr>
<td>25- less than 35 years</td>
<td>83</td>
<td>42.3</td>
</tr>
<tr>
<td>35- less than 45 years</td>
<td>84</td>
<td>42.9</td>
</tr>
<tr>
<td>45- less than 55 years</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>100</td>
</tr>
<tr>
<td><strong>Qualification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma or less</td>
<td>23</td>
<td>11.7</td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>157</td>
<td>80.1</td>
</tr>
<tr>
<td>Master Degree</td>
<td>12</td>
<td>6.1</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>100</td>
</tr>
</tbody>
</table>

**RELIABILITY**

To make sure that the study instrument is reliable and measures what it is made for to, the construct was subjected to the scale reliability procedure using the Cronbach’s Alpha criterion to assess the internal consistency and reliability of the studied construct.22

The Cronbach’ Alpha coefficient reached (86.2%) above 0.650, the value exceeds the accepted cut-off value of 0.60, as suggested by.22

**DATA ANALYSIS**

Methods of data processing depended on number of statistical analysis techniques in the SPSS program.

1. Descriptive technique: Frequency, means, standard deviations.
2. Reliability and validity: Cronbach’s alpha and correlations.
3. Analytical technique: chi-square to test the hypotheses of the study.

**RESEARCH SCOPE**

**Subject:** The research is limited to study the parent’s knowledge and attitude towards early orthodontic treatment for their children.

**Time:** the planned time for this research is August-September 2019.

**RESULTS**

What is the level of parent’s knowledge towards early orthodontic treatment for their children?

To identify the level of parent’s knowledge towards early orthodontic treatment for their children, Means and Std. Deviation were executed; table 3 shows the results:

Table 3 indicated the sample’s attitude towards knowledge towards early orthodontic treatment for their children in Jordan; Average mean was (3.266), and Std. Deviation was (0.919) (moderate level).
It is noticed that mean ranged \[2.980-3.949\] at (moderate-high) degree level. “The orthodontic treatment in some of the children should be performed in 2 separate stages” has the highest level of estimation, mean was (3.949) and Std. Deviation was (0.597) at high level.

“Dentofacial abnormalities are not preventable and treatable because they are genetically inherited” has the lower level of estimation; mean was (2.980), Std. Deviation was (1.105) at moderate level.

What is the parents’ attitude towards early orthodontic treatment for their children?

To identify the parents’ attitude towards early orthodontic treatment for their children, Means and Std. Deviation were executed; table 4 shows the results:

Table 4 indicated the parents’ attitude towards early orthodontic treatment for their children in Jordan; Average mean was (3.254), Std. Deviation was (1.075) (moderate estimation).

It is noticed that mean ranged \[2.393-3.500\] at moderate degree of estimation for each statement.

“I take my child to visit the dentist to check the need for orthodontic care at age 7 or 8.” has the highest level of estimation, Mean was (3.500) Std. Deviation was (1.060) at moderate level.

“To begin orthodontic treatment, I wait till all his/her permanent teeth erupt completely.” has the lower level of estimation; Mean was (2.393), Std. Deviation was (1.054) at moderate level.

Are there differences in parent’s knowledge towards early orthodontic treatment according to parent’s (Age, Education qualification)?

ONE WAY ANOVA was used to find out if there are differences in parent’s knowledge towards early orthodontic treatment according to parents’ (Age, Education qualification).
Table 5 indicated that: There is no difference in parent’s knowledge towards early orthodontic treatment according to (age), where significant level was (0.070) which is more than specific value (0.05); calculated f was (1.509) lower than tabled f which is (1.394).

Table 5 indicated that: There is a significant difference in parent’s knowledge towards early orthodontic treatment according to Education level, where significant level was (0.00) which is less than specific value (0.05); calculated f was (6.413) higher than tabled f which is (1.394). To demonstrate the direction of these differences, Scheffe test was performed as the following:

Table 6 indicated that the direction of these differences were to the favor of PhD Degree as the Mean reached (4.3182) Std. Deviation was (0.26243), followed by Master Degree with Mean of (3.7424) and Std. Deviation of (0.33978), then Bachelor Degree with Mean of (3.1395) and Std. Deviation of (0.40165), and finally Diploma or less with Mean of (2.7036) and Std. Deviation of (0.35866).

Are there differences in parent’s attitude towards early orthodontic treatment according to parents’ (Age, Education qualification)?

ONE WAY ANOVA was used to find out if there are differences in parent’s attitude towards early orthodontic treatment according to parent’s (Age, Education qualification).

Table 7 indicated that: There is no difference in parent’s attitude towards early orthodontic treatment according to (age), where significant level was (0.159) which is more than specific value (0.05); calculated f was (1.312) which is lower than tabled f which is (1.394).

Table 7 indicated that: There is a significant difference in parent’s attitude towards early orthodontic treatment due to Education level, where significant level was (0.00) which is less than specific value (0.05); calculated f was (3.097) which is higher than tabled f (1.394). To demonstrate the direction of these differences, Scheffe test was performed as the following:

Table 8 indicated the direction of these differences were to the favor of PhD Degree as the Mean reached (4.000) Std. Deviation was (0.31623), followed by Master Degree with Mean of (3.6667) and Std. Deviation of (0.28069), then Bachelor Degree with Mean of (3.2752) and Std. Deviation of (0.50746), and finally Diploma or less with Mean of (2.7652) and Std. Deviation of (0.51840).

DISCUSSION & RECOMMENDATIONS

The results indicated that there is moderate level of knowledge among Jordanian parents towards early orthodontic treatment for their children. The study indicated that there is moderate level of attitude among Jordanian parents towards early orthodontic treatment for their children.

This may be due to several reasons, the most important of which is limited education and knowledge. The study indicated that there is a significant difference in parent’s knowledge towards early orthodontic treatment due to Education level. The study indicated that the educational level is directly correlated with knowledge and attitude towards early orthodontic treatment for their children.

These results are consistent with the findings of a Moshkelgosha et al. study which its results showed that there is a significant effect of higher social class on the parents’ knowledge and attitude and beneficial impact of higher educational level on parents’ attitude.
The researcher believes that this is also related to the community culture and wealth in Jordan, which did not reach the advanced level of health care and knowledge. That also related to health social insurance which does not include all the citizens; orthodontics is often not included in free treatment or insurance in private sector. Mane et al. study results showed that people in rural areas comparatively lack awareness regarding advances and various techniques in orthodontic treatment.

Baheti & Toshniwal study found that knowledge about orthodontics and its relevant facts would be higher in high-income groups than in low-income groups.

The study recommended the following:
1. Parents should do an early orthodontic examination when their children reach the age of 5-7 years.
2. Orthodontic treatment should be performed early because delays may aggravate problems in children.
3. The need to publish and distribute awareness leaflets about the importance of early treatment of orthodontics in Jordan.
4. The need to include orthodontic in health insurance contracts for companies in Jordan.

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