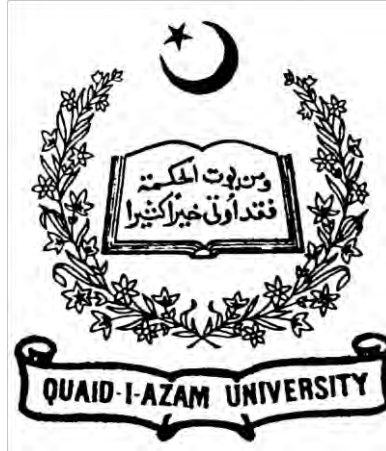


Master of Science in Public Health



**Association of Perceived Dental Aesthetics with
Psychosocial well-being among young adults of
Rawalpindi**

By

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(2022)

*Association of Perceived Dental Aesthetics with
Psychosocial well-being among young adults of
Rawalpindi*

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(362796-PIO/MSPH-2020)

**Dissertation submitted in partial fulfilment of the requirement for
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Declaration

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I understand that plagiarism is the use or presentation of any work by others, whether published or not, and can include the work of other candidates. I also understand that any quotation from the published or unpublished works of other persons, including other candidates, must be clearly identified as such by being placed inside quotation marks and a full reference to their source must be provided in proper form.

This dissertation is the result of an independent investigation. Where my work is indebted to others, I have made acknowledgments.

I declare that this work has not been accepted in substance for any other degree, nor is it currently being submitted in candidature for any other degree.

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ABSTRACT

Background: Oral health is equally important as that of the physical and physiological health of an individual. The maintenance of psychosocial well-being is important for the preservation of physical psychological health and quality of life

Objectives: This study aimed to evaluate the association of self-perceived dental aesthetics with psychosocial well-being or interactions and to analyze the impacts of dental aesthetics on the self-esteem, confidence, social interactions and behavioral associations of the young adults of Rawalpindi along with finding its association with socio-demographic factors like age, gender.

Methodology: A cross-sectional study was carried at public and private universities of Rawalpindi city. A total of 268 respondents were selected through multistage random sampling. Data were entered and analyzed using SPSS version 26.0. Independent sample t-test and one-way ANOVA were applied to examine the association of dependent variable with socio-demographic factors.

Results: Among the 268 respondents, majority of the respondents were females (n= 159, 52%). Nearly half of the respondents studied at private universities (n= 135, 50%). Overall, the results showed that majority of the respondents reported no need for treatment (n= 196, 69%) Significant association were reported with marital status, want to improve dental appearance and comfortable with dental appearance (P value<0.05). .

Conclusion: Dental aesthetics was found to affect the psychological well-being of the subjects. Age, marital status, level of education, and level of income were all factors that significantly affected self-perceived aesthetics and psychosocial well-being.

Keywords: Perceived dental aesthetics, PIDAQ, Psychological wellbeing, Private, Public, Rawalpindi, Young adults.

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TABLE OF CONTENTS

Declaration.....	iv
ABSTRACT	v
ACKNOWLEDGMENTS	vi
TABLE OF CONTENTS	vii
LIST OF TABLES.....	ix
LIST OF FIGURES	x
CHAPTER I: INTRODUCTION	1
1.1 Background.....	1
1.2 Rationale.....	2
1.3 Objectives	4
1.4 Research Question	4
1.5 Significance of the study	4
CHAPTER II: LITERATURE REVIEW	6
2.1. Dental Aesthetics.....	6
2.1.1 Orthodontics and Wellbeing.....	7
2.1.2 Dental Implantology	9
2.1.3 Tooth or Dental Whitening.....	10
2.1.4 Dental Veneers.....	10
2.2 Importance and need of dental aesthetics	11
2.3 Association of dental aesthetics with psychosocial well-being.....	12
2.5 Literature Gap.....	15
2.6 Operational Definitions	15
CHAPTER III: METHODOLOGY	17
3.1 Study design	17
3.2 Study setting	17
3.3 Study duration.....	17
3.4 Sample size	17
3.5 Research Participants.....	17

3.5.1 Inclusion Criteria	17
3.5.2 Exclusion Criteria	18
3.6 Sampling Strategy.....	18
3.7 Data Collection Instrument.....	18
3.7.1 Content of the Questionnaire.....	19
3.8 Data Analysis Procedure	19
3.9 Descriptive analysis	20
3.10 Inferential analysis.....	20
3.11 Ethical Considerations	21
CHAPTER IV: RESULTS	22
4.1. Sociodemographic characteristics:	22
4.2. Descriptive summary of Psychological Impact of Dental Aesthetics (PIDAQ): ..	24
4.3. Summary of Individual PIDAQ score:	25
4.4. Self-perceived Malocclusion:	28
4.5. Association between Perceived dental aesthetics and Psychosocial Well-being among young adults:.....	28
CHAPTER V: DISCUSSION	32
5.1 Limitations	34
5.2 Strengths	35
CHAPTER VI: CONCLUSIONS AND WAY FORWARD	36
REFERENCES	37
Appendix A - Questionnaire.....	40
Appendix B – Consent Form	44
Annexure C- Gantt chart.....	46
Annexure D- Budget.....	47
Annexure E- IRB Letter.....	48

LIST OF TABLES

Table 1: Sociodemographic characteristics of the respondents	22
Table 2: Mean and Standard deviation of Psychological Impact of Dental Aesthetics	24
Table 3: Summary of PIDAQ Responses	25
Table 4: Association between Perceived dental malocclusion and psychosocial well-being among young adults	28
Table 5: Association between Sociodemographic characteristics and psychosocial well-being among young adults (Independent T test)	28
Table 6: Association between sociodemographic characteristics and Psychosocial well-being of young adults (One Way ANOVA)	30

LIST OF FIGURES

Figure 1: Data analysis plan	20
Figure 2: Comfortable with appearance of teeth	23
Figure 3: Want to improve dental appearance	23
Figure 4: Social life is affected by dental appearance	24
Figure 5: Self-perceived Malocclusion	27

List of Abbreviations

AC	Aesthetic Component
BAME	Black, Asian, Minority Ethnic
IOTN	Index of Orthodontic Treatment
IRB	Institutional Review Board
PIDAQ	Psychosocial impact of dental aesthetic questionnaire
SPSS	Statistical Package for Social Science
WHO	World Health Organization

CHAPTER I: INTRODUCTION

This initial chapter of the research study is organized with the aim of providing a brief overview of the aspects and focus that will be discussed throughout the study. The section involves the potentially elaborated discussion of the background associated with the elaboration of perceived dental aesthetics and its relationship with the psychosocial wellbeing among young adults. The collection of literature evidence from the prevailing research studies was helpful in identifying the problem statement associated with the topic. The description of the research aim, research objectives and research questions are also provided in this chapter for the observers and peer-reviewers to understand the prospects and focus of the study. Moreover, this section is constituted of the elaboration of significance of the study and the outline of the structure that was followed for the organization and formation of this research study.

1.1 Background

Oral health is equally important as that of the physical and physiological health of an individual. The maintenance of psychosocial well-being is important for the preservation of physical psychological health and quality of life (de Paula et al., 2009).

In the field of general and clinical medicine, the concept of the quality of life is referred to as the perceptions and understandings of the individual regarding the standards of living with respect to cultural values, society and well-being. Oral health plays a crucial role in helping individuals to maintain social interactions and promote their values within the society (Gazit-Rappaport, Haisraeli-Shalish, and Gazit, 2010). In accordance with the description of the quality of life provided by the WHO, it has been observed that oral health

impacts the individual's dento-facial self-confidence and social life to an extent (Bucci et al., 2019). Among various oral dysfunctions and diseases, dental malocclusion has been among the three oral health conditions that were significantly identified as the handicapping dentofacial anomaly.

The studies have identified that dental malocclusion is regarded as the type of anomaly that significantly causes the disfigurement and might cause certain oral dysfunction, which proportionally influences the emotional, social, psychological and physical well-being of the individuals (Silva et al., 2011 and Gazit-Rappaport, Haisraeli-Shalish, and Gazit, 2010). The study performed by (Isiekwe et al., 2016) has reported that the occurrence of malocclusion promotes considerably more serious impacts on psychosocial well-being than its relative physiological impacts. The term psychosocial impacts are potentially defined as the emotional and psychological reaction of expressing insecurities with regards to the feeling about self-expression, appearance, perceptions of other people and comparison of other individuals with ones' self (Iranzo-Cortés et al., 2020). All of these factors negatively impact the ability of the subject to interact effectively with the social environment.

1.2 Rationale

The implication of dental aesthetics is considered to be an element that viably helps the individual in the development of personality and enhance the terms of self-confidence as well as social interactions (Bucci et al., 2019). This is because a representable smile and oral hygiene are the key factors contributing towards the development of individuals' self-esteem in accordance with the norms of society. It has been observed that a significant amount of research studies has been performed to evaluate the impacts of dental aesthetics

on the maintenance of psychosocial well-being. The findings and evidence obtained from the prevailing literature sources have reported that the improvement in the self-esteem promoted due to the implication of dental aesthetics results in increasing people's self-esteem (Isiekwe et al., 2016 and Raghavan et al., 2019). The course of analysis of the research studies has addressed that the men appeared to be perfectionists and more concerned regarding their oral cavity appearance than women (de Paula et al., 2009).

On the contrary, the study performed by Grewal et al. (2019) ensured that the females and young adults appeared to be more sensitive and concerned regarding their dentition status and aesthetics. The alignment and the tooth color are the two aspects that are of major consideration among young adults, as both of these aspects influences their pattern and extents of interaction with people living within the community (Zaidi et al., 2020). The majority of the clinical studies have reported a strong association between dental aesthetics and the psychosocial well-being of young adults. However, there is scarcity of literature emphasizing on perceived dental aesthetics and its association between psychosocial wellbeing in Pakistan.

Self-perception of the individuals regarding their oral aesthetics negatively restricts their ability to interact properly and lower their self-esteem (AlSagob et al., 2021). Thus, the purpose of this study is to provide insight into the issue and promote dental health by evaluating the association of self-perceived dental aesthetics with the psychological and social well-being of young adults living in Rawalpindi, Pakistan.

1.3 Objectives

This research study aims to determine the association between self-perceived dental aesthetics and its psychosocial affects among young adults living in Rawalpindi, Pakistan, using the medium of self-rated Aesthetic Component (AC) of the Index of Orthodontic Treatment Need and Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ).

Observing the aim, the objectives of this study are stated as under:

1. To evaluate self-perceived dental aesthetics with psychosocial well-being or interactions.
2. To analyze the impacts of dental aesthetics on the self-esteem, confidence, social interactions and behavioral associations of the young adults of Rawalpindi.
3. To check and compare demographics and dental aesthetics with psychosocial wellbeing.

1.4 Research Question

What is the association of perceived dental aesthetics with psychosocial well-being among Rawalpindi, Pakistan young adults?

1.5 Significance of the study

The findings of the previous research studies have identified that the occurrence of malocclusion among young adults is regarded as the obstacle that hinders their psychosocial interactions and well-being (Grewal et al., 2019 AlSagob et al., 2021). The observations have determined that the orthodontic treatments of malocclusion contribute

significantly to promoting their self-esteem and confidence, which proportionally improve the quality of life and maintenance of psychological well-being (Iranzo-Cortés et al., 2020). But, there is a lack of awareness and understanding regarding the direct relationship between self-perceived dental aesthetics and psychological and social well-being (Zaidi et al., 2020). This evaluation will help address the direct impacts of oral care, oral diseases, malocclusion and dysfunctions on the behavioural association of young adults. This study is organised to determine the facts and understanding regarding the dental dysfunctions and disturbances in the young people living in Rawalpindi. The subjective analysis effectively provides the elaboration of the understanding and awareness of the young generation related to the importance of dental aesthetics and oral health with respect to its psychosocial impacts.

CHAPTER II: LITERATURE REVIEW

This chapter of the research study is designed to provide a considerable amount of elaboration and information to the peer-reviewers regarding the variables focused prospects expressed in the study. The chapter is organized systematically to describe keywords and their potential association. The aspects of dental aesthetics, its significance and its relative impacts on the psychosocial well-being and interactive behaviors of young adults will be discussed in this section. The presentation of the evidence in a critical manner is helpful for the peer-reviewers and readers to understand the context and prospects of this study. It will support viably in understanding the results of the research study.

2.1. Dental Aesthetics

The application of the dental aesthetic is evaluated to be one of the most effective treatments and interventional study fields of dentistry and cosmetic dentistry. The branch of dental aesthetic enables the professionals to understand and imply various interventional approaches and treatments on the individuals to improve the oral health and appearance of the dentofacial structure (Afroz et al., 2013). The treatment approaches associated with dental aesthetics are potentially adopted after observing the requirements of individuals and their dental status. The critical evaluation of the research studies has reported that the adoption of dental aesthetics is promoted to achieve presentable structure and smile (Nazir, Mahmood & Anwar, 2014 and Zaidi et al., 2020).

This is because this particular specialty of dentistry contributes to the modification in the structure, shape, size and color of the teeth. The biggest advantage that has served in providing innate popularity to the aspects of dental aesthetics is the adoption of noninvasive

or minimally invasive procedures for the effective and sustainable modification in the oral cavity and dental status (MAHMOOD & Anwar, 2014). In the process of the implication of dental aesthetics, the experts proceed initially with the evaluation of the facial features and considerations of people (Afroz et al., 2013). After which, the suggestion is promoted by the orthodontists towards the patients with regards to the procedures and treatment strategy that has to be implied for them. According to the study conducted by (Khan & Fida, 2008), it is addressed that the dental aesthetics interventions commonly used and preferred include tooth whitening, dental veneers, orthodontics and dental implantology. Among them, the most demanded procedures involve orthodontics and tooth whitening. This is because people, especially young adults and parents of children of age 6-10 years, are primarily concerned regarding the alignment of the teeth, their size and the colour (de Paula et al., 2009).

2.1.1 Orthodontics and Wellbeing

Orthodontics is considered as an interventional approach and treatment that is utilized by the oral health care professional to improve the appearance of the oral structure by altering and modifying the alignment of the teeth to improve the dentofacial appearance and smile of the patients (Chakradhar et al., 2017). The medium of braces and invisible aligners are commonly used for the correction and modification of the position of teeth. This is a noninvasive procedure but requires the patients to wear braces or transparent aligners for a longer duration of time (Isiekwe et al., 2016).

On the other hand, Imani et al. (2018) claimed that there has been strong as well as significant association between oral health, position, shape, and appearance of the teeth,

treatment techniques with the mental health and wellbeing of affected individuals. In addition to this, the recent study determined that malocclusion is a type of inappropriate illness that developed among certain individual due to a deviation from beauty norms. Moreover, the study determined that the complete appearance and shape of the teeth along with the face could have an adverse effect on the mental image of an individual that deteriorated their personal satisfaction.

Furthermore, it has been argued by Danaee et al. (2015) that despite the significance of orthodontic tools in improving the health of both the gum and teeth, it is important for orthodontic experts to look for problems with facial attractiveness as well as social psychology theory. Notwithstanding the fact, it has been determined while reviewing articles that although a number of studies have provided information of the significant impact of orthodontics on the quality of life of individual but no influence has been recognized on their mental or psychological health conditions. Henceforth, the present study has been conducted to bridge this identified gap and address the proposed research problem. Notwithstanding the fact, it has been further reviewed in a study by Sunil et al. (2020) that females and young adults observed to be more sensitive and concerned in relation to their dentition status and aesthetics. The alignment and the tooth color are found to be two important characteristics that are of major consideration among young adults, as both of these aspects influences their pattern and extents of interaction with people living within the community.

2.1.2 Dental Implantology

This is another common and minimally invasive procedure that is used to improve the structure of the oral cavity. In this case, replacement or induction of artificial tooth is maintained in the regions where there exists an empty jaw due to a missing tooth. The implantation procedure is also performed after the removal of a severely damaged tooth (MAHMOOD & Anwar, 2014). This is because it is relatively impossible for professionals or dentists to revive the damaged teeth structures. The procedure involves the implantation of the artificial tooth in the jaw bone or maxillary. The implanted tooth is designed in a manner of performing similar physiological functions as the original one (Chakradhar et al., 2017).

Notwithstanding the fact, it has been argued by Sato et al. (2019) that the issues related to the aesthetics might be improved with the use of conventional treatment and implants. Additionally, this study has indicated that the quality of life of elderly persons could be improved with the use of such treatments. In correspondence to this, it has been mentioned by Pereira et al. (2021) that the mental health of an individual has a positive relationship with the use of implants rather than dentures in both younger and elderly adults. In addition to this, the latter study provided the fact that the satisfaction of patients with respect to their mental health with the use of both conventional treatment and implants was similar. This however, depicted the fact that the previous studies have failed to determine the impact of orthodontics on the mental health and self-image of an individual.

2.1.3 Tooth or Dental Whitening

The observation of the research evidence has expressed that dental whitening is the most demanded procedure as it helps in reviving the white colour and shine of the teeth. The natural colour is usually lost due to the prevalence of oral diseases, excessive bleeding from gums, lack of oral hygiene or due to the consumption of food and beverages that are not good for oral health. This is also a non-invasive procedure in which the use of bleaching gel or cold light lamp is promoted to attain the natural colour of the teeth (Khan & Fida, 2008). Nevertheless, a study has been conducted by Maroneze et al. (2019) claimed that people with white dentals or teeth were more likely to develop self-confidence due to adequate and positive interaction they had with others. This in turn resulted in improving social interaction and one's quality of life. On the other side, it has been depicted in the similar study that people with plague or yellow teeth often isolated themselves in the fear of societal pressure or bully they experienced within the community. However, the underlying cause of mental health disturbances and even certain illnesses among adolescents are yet to be explored.

2.1.4 Dental Veneers

This procedure is particularly used in the cosmetic dentistry for the positioning of the teeth. The process is used to improve shape, size and colour of natural teeth. The process involves the implication of porcelain or the sheet of composite, which is implied on the visible part of the tooth to restructure and modify. This is also a non-invasive treatment approach that is used to structure broken teeth and correct their alignment (MAHMOOD & Anwar, 2014). It has been evident from a study by Sunil et al. (2020) that oral health has had a significantly substantial impact on the wellbeing and mental health of individuals. The

authors further mentioned that due to lack of access to certain treatment and oral implantations people, specifically adolescents from BAME population intended to experience an immense pressure on their mental stability because of their poor oral health, teeth appearance that negatively affect their body posture and overall personality. Notwithstanding the fact, the previously available literature observed to have not provided adequate information as a result of which the present study has been conducted to develop a connection between oral health and mental health issues.

2.2 Importance and need of dental aesthetics

The course of analysis of the prevailing research studies has identified that with the rise in the standards and values of the competitive society, the physical appearance of the people is of primary importance (MAHMOOD & Anwar, 2014; de Paula et al., 2009 and Chakradhar et al., 2017). Particularly among the young generation, the element of consciousness is significantly existing, with the notion of promoting their presence and improving their values within the society. The aspects of pleasing and modified physical appearance are of innate importance in the personal and professional lives of the individuals to ensure effective representation within the community (Isiekwe et al., 2016). With the progressive modernization and globalization around the globe, young men and women, especially students, are becoming more concerned regarding their appearance and facial features. The observation of the literature evidence has supported the understanding that the young generation is now providing the subsequent amount of consideration towards the dentofacial structure, oral health, oral hygiene and appearance, to improve their personality (Khan & Fida, 2008).

This is the potential mediating cause of the immense growth and progress in the field of cosmetic and clinical dentistry, as people are expressing their concern regarding the appearance of their jaw and teeth, which proportionally directs them to imply a significant amount of efforts on the maintenance of their smile. According to Chakradhar et al. (2017), the individuals belonging to different regions and progressing societies are becoming interested in attaining awareness about different aesthetic procedures and approaching dentists or orthodontists who can help them modify the appearance and health of the oral cavity. The aspects of dental aesthetics are merged with the prospects of dentistry to ensure the provision of beauty treatments and efficacy in the physiological functions of the oral cavity and dental status.

The evaluation supported the understanding with the growing aspects of modernization in the societies, the implication of dental aesthetics have potentiated the self-esteem and confidence among the people, specifically young adults and students (de Paula et al., 2009). This is because the young generation is significantly becoming concerned regarding their facial profile and jaw structures as it helps in making them presentable and raise the level of their self-esteem and confidence while interacting with different people living in the relative society (Chakradhar et al., 2017). The utilization of dental aesthetics has provided a well-recognized definition of beauty and its appreciation as per the demands of people and standards of different communities.

2.3 Association of dental aesthetics with psychosocial well-being

The physiological, physical and psychological well-being plays a crucial role in the maintenance of social interactions of the people. The clinical evaluation and findings have

provided substantial evidence elaborating the association of the psychological and social well-being of the individuals with the self-perceived dental aesthetics (MAHMOOD & Anwar, 2014 and Zaidi et al., 2020). It has been identified that the psychosocial health of the individuals can be significantly affected due to adverse oral conditions and dental aesthetics. The perceived dental aesthetics and their proper implications have been observed to play a vital role in progressively enhancing self-esteem and confidence among individuals (Isiekwe et al., 2016). It is already known that the element of self-esteem and confidence prevailing among the individual plays a vital role as the mediators in enhancing and representing the positive aspects of the individuals' personality (Chakradhar et al., 2017). The majority of the clinical studies have reported a strong association between dental aesthetics and the psychosocial well-being of young adults. This is because the self-perception of the individuals regarding their oral aesthetics negatively restricts their ability to interact properly and lower their self-esteem.

With the terms of modernization, there has been an identifiable alteration in the norms and standards of the societies. This is the major trigger that affects the quality of life and behavioral association of the young adults and even children. A term of slight eccentricity from these standards and norms is developing negative influence on the representation and recognition of the young adults in the society (Khan & Fida, 2008). This is because the inconsideration towards the physical appearance is a precursor for the uncertain decline in the level of confidence, positive behavioral association and self-esteem. The course of analysis of the psychological and mental health care studies have reported that the disrupted self-confidence and self-esteem serves as the major key factors for decline in the

psychological health of the individuals (de Paula et al., 2009). Studies in this regard have supported the understanding that the inefficacy of the individual to maintain stable psychological status and behavioral association, contributes solely in declining the efficacy and potentials of interacting with other people living within the society (MAHMOOD & Anwar, 2014 and Chakradhar et al., 2017). The maintained levels of self-confidence productively contribute in promoting the personal and professional profile of the individual. The maintenance of personality and professional profile is observed to be an utmost priority for the young adults, progressing towards their career growth (Khan & Fida, 2008).

Observing the stance, it has been reported through the findings of several research studies that the maintenance of self-esteem is a preliminary principle within the field of dental aesthetic and cosmetic dentistry. Many studies have been performed to evaluate the psychosocial impacts of the dental aesthetics, with the term of including factors such as age, educational levels, gender and geographical locations as well (Chakradhar et al., 2017 and Isiekwe et al., 2016). The account of these studies was maintained with the aim of evaluating the demands of dental aesthetics among the people belonging to different age, gender and ethnicities. The studies have highlighted that the dental aesthetics are commonly known as smile aesthetics among the young generation as it is significantly and widely used to improve the smile appearance and dentofacial features of the patients seeking the treatments (Khan & Fida, 2008). The implication of different dental aesthetic procedures provokes the sustainable progression in their personality, behaviour, personal

association and interactions with people as well as the deliverance (MAHMOOD & Anwar, 2014).

2.5 Literature Gap

From the aforementioned review of the previously published literature, it has been observed that the studies have failed to provide adequate information in relation to the impact on oral health on the mental health of individuals and their overall health and self-esteem. Henceforth, the present study has been conducted and adopted different research techniques and tools to assess the association of dental aesthetics with psychological wellbeing among people in Rawalpindi. The research methodology adopted and presented in the following chapter has played an essential role in bridging the identified gaps as well as addressed research problem.

2.6 Operational Definitions

2.6.1 Perception

Perception may be defined as a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment.”. In simple words we can say that perception is the act of seeing what is there to be seen.

2.6.2 Psychosocial well being

Psychosocial well-being is a construct that includes emotional or psychological well-being, as well as social and collective well-being. The term “quality of life” is similar to psychosocial well-being in that it involves emotional, social and physical components.

2.6.3 Dental aesthetics

Dental aesthetics is a subspecialty of odontology that is responsible for providing harmony and beauty to the smile. When we talk about a "beautiful smile" we are referring not only to the denture, but to three distinctive components that define it and that must be taken into account: The lips. The gums. The teeth.

CHAPTER III: METHODOLOGY

3.1 Study design

A quantitative research approach using cross sectional study design was used for the current study.

3.2 Study setting

The study setting for the current research was public and private universities of Rawalpindi city.

3.3 Study duration

The study duration for this research was 6 months.

3.4 Sample size

The sample size was calculated using proportion formula for sample size calculation in OpenEpi menu, Version 3.01 software. Previous prevalence of 14%, IOTN-AC, as reported by a study conducted at Margalla Institute of Health Sciences Rawalpindi, Pakistan in 2014(Rozina,2014). Calculated sample size with 95% Confidence, an expected prevalence of 14 % and a precision of 5%. The final sample size came out to be 268 students.

3.5 Research Participants

Research participants who were studying in the universities were selected on the basis of inclusion and exclusion criteria.

3.5.1 Inclusion Criteria

1. The sample comprises eligible young adult female and male college students.

2. Participants are included if they were students at one of the selected colleges, between the ages of 18 and 26 years.

3.5.2 Exclusion Criteria

1. Dental students were excluded from the current research.
2. Those with a history of/ongoing orthodontic treatment were excluded from the study as it was predicted that they would have high dental aesthetic awareness and hence their perceptions would bias the result.
3. Those who will not agree to participate would exclude from study.

3.6 Sampling Strategy

Desired sample was collected by Multistage Random Sampling. Public and private universities of Rawalpindi were enlisted and randomly selected by Lottery method. The number of respondents from each university were selected randomly. A self-administered anonymous questionnaire was distributed with the permission of the University Administration, to students between the ages of 18-26 years. The respondents received an explanation of the purpose of the questionnaire and, only after a consent form with a questionnaire was sent to all participants. The questionnaire was prepared in English and the questions were designed to evaluate how dental aesthetics affects self – confidence and its impact on psychosocial behaviour.

3.7 Data Collection Instrument

The “Psychosocial Impact of Dental Aesthetics Questionnaire” (PIDAQ) developed by

Klages et al was used in the study. The PIDAQ is a psychometric instrument consisting of 23 items divided into four domains, self-confidence (six items), social impact (eight items), psychosocial impact (six items) and aesthetic concerns (three items). It is a self-rated scale with numerical values 1 “not at all”, 2 “a little”, 3 “somewhat”, 4 “Alot” and 4 “Absolutely”. The Questionnaire also included scale of Aesthetic Component, AC-IOTN (Index of Orthodontic Treatment Need) developed by Brook and Shaw (1989).

3.7.1 Content of the Questionnaire

The questionnaire contained three major sections:

First part is of demographics comprising of gender, age, academic year, household income, marital status.

Second Part is of Dental Aesthetics Questionnaire” (PIDAQ) developed by Klages et al is used in the study. It is a scale with numerical values 1 “not at all”, 2 “a little”, 3 “somewhat”, 4 “Alot” and 5 “Absolutely”.

Third part; Dental aesthetics using (IOTN) AESTHETIC COMPONENT.

Students have been shown 10 photographs of anterior teeth with varying degrees of malocclusion (1-10) and have been asked to grade they believed most closely appeared like their own dentition.

3.8 Data Analysis Procedure

Code book was developed and data was entered in Statistical Package for Social Sciences (SPSS) version 26. After careful data entry, data was checked for any error before

proceeding to the further analysis. After data cleaning, data transformation was carried out for certain variables. For same direction of scoring, items of Dental Self Confidence (DS) were scored in a reverse mode. Data analysis was done in two phases: descriptive analysis and inferential analysis.

3.9 Descriptive analysis

Descriptive statistics were generated for sociodemographic characteristics and outcome variable. Categorical data was summarized in the form of frequencies and percentages and presented in table form, Bar chart and Pie chart. While for continuous variables, mean and standard deviation were calculated.

3.10 Inferential analysis

Independent sample t-test and One-way ANOVA were used to find the association of selfperceived dental aesthetics with psychosocial well-being or interactions and with the sociodemographic characteristics of the respondents. P-value less than 0.05 was considered statistically significant at 95% confidence interval.

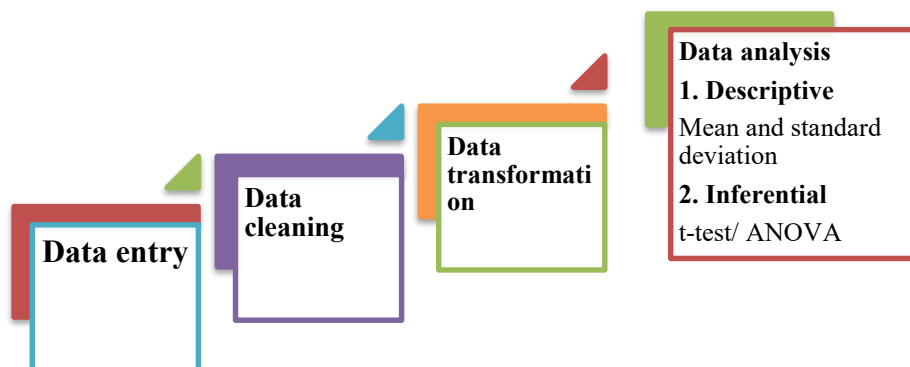


Figure 1: Data analysis plan

3.11 Ethical Considerations

- IRB approval was taken from the ethical committee of Al Shifa School of public health after synopsis presentation.
- Informed consent form was attached in annexure that will be signed from every participant before data collection.
- The information collected from the participants will only be used for the purpose of research. All the information and data would be kept strictly confidential.
- There will be no risk in this research.
- Benefits: This study will help understand different perceptions of dental aesthetics and its effect on quality of life and persons' self-confidence.

CHAPTER IV: RESULTS

4.1. Sociodemographic characteristics:

A total of 268 respondents were included in this study. More than half of the respondents were females (n= 139, 52%). In current study, most of the respondents were undergraduate students (n= 176, 66%). Detailed sociodemographic characteristics of the respondents are shown in table 1.

Table 1: Sociodemographic characteristics of the respondents

Sr. No.	Variables	n (%)
1	Age	
	18-21 years	115 (43)
	22-25 years	78 (29)
	26-29 years	75 (28)
2	Gender Male	129 (48)
	Female	139 (52)
2	Marital status Single	168 (63)
	Married	100 (37)
3	Education	
	Undergraduate	176 (66)
	Graduate	78 (29)
	Postgraduate	14 (5)
4	Income Low	93 (35)
	Moderate	101 (38)
	High	74 (28)
5	University	
	Public	133 (49.6)
	Private	135 (50.4)

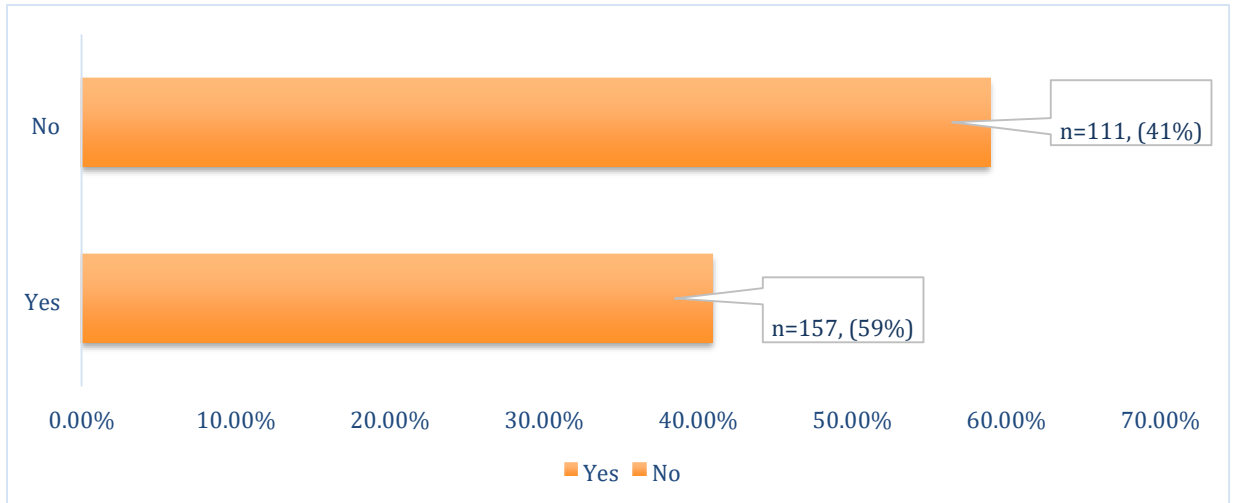


Figure 2: Comfortable with appearance of teeth

It was found that more than half of the study participants were not feeling comfortable with the appearance of their teeth (n= 157, 59%) as shown in figure 3.

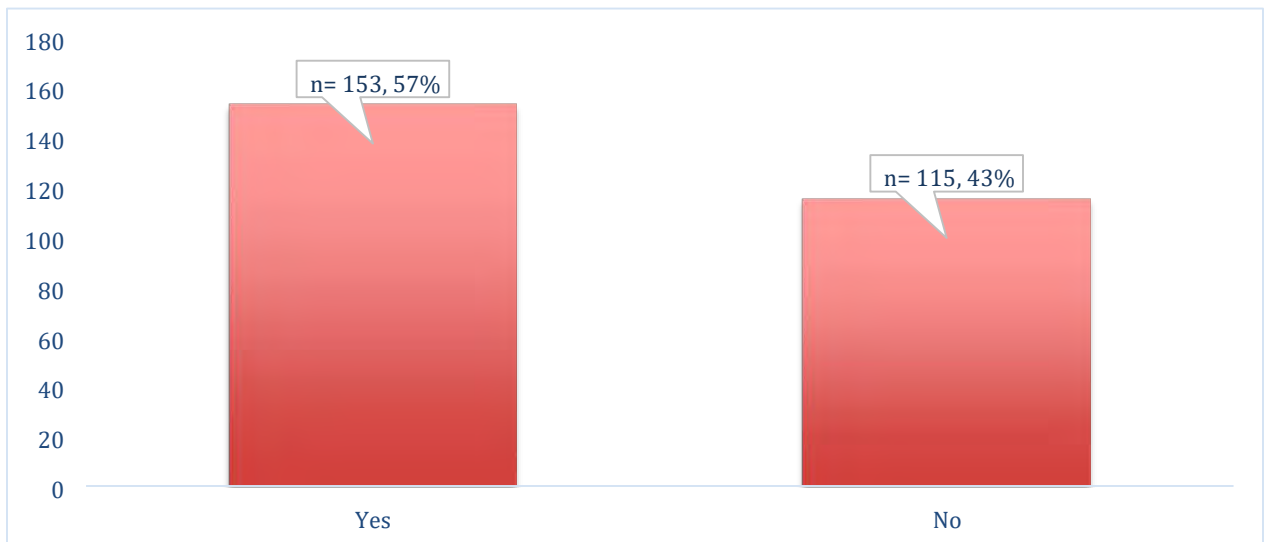


Figure 3: Want to improve dental appearance

Results revealed that most of the respondents wanted to improve the appearance of their teeth through orthodontic treatment (n=153, 57%) as shown in figure 4.

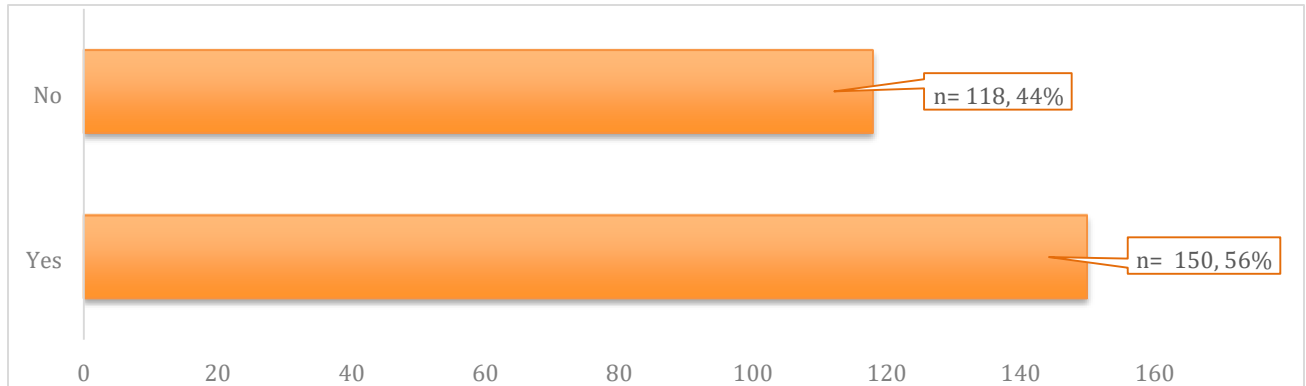


Figure 4: Social life is affected by dental appearance

It was found that majority of the respondents reported their dental appearance affected their social life activities (n= 150, 56%) as shown in figure 5.

4.2. Descriptive summary of Psychological Impact of Dental Aesthetics

(PIDAQ):

In current study, psychological impact of dental aesthetics was assessed using a 5-point Likert scale (PIDAQ) ranging from 1= not at all to 4= absolutely. Mean and standard deviation of the computed score for psychological impact of dental aesthetics is given in table 3.

Table 2: Mean and Standard deviation of Psychological Impact of Dental Aesthetics

Sr. No.	Variables	Range	Mean ± S.D.
1	Psychological impact of dental aesthetics	63	65.99 ± 13.44
2.	Dental self confidence	14	22.57 ± 2.88
3.	Social impact	26	18.39 ± 5.63
4.	Psychological impact	22	15.68 ± 4.80

5	Aesthetic concern	12	9.34 ± 4.38
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It was found that mean score of dental self confidence among study population was 22.57 ± 2.88 with score ranging between 16-30. Similarly, social impact of dental aesthetics was reported to be 18.39 ± 5.63 on an average on a scale ranging between 9-35. Psychological impact of dental aesthetics was reported to be 15.68 ± 4.80 on a scale ranging between 6-28. Aesthetic concern regarding dental appearance was reported to be 9.34 ± 4.38 on a scale ranging from 3-15. The mean score of overall psychological impact of dental aesthetics among study population was 65.99 ± 13.44 on a scale ranging between 39-102 showing a notable psychological impact of dental aesthetics in study population.

4.3. Summary of Individual PIDAQ score:

In present research, each respondent was asked 23 questions to assess their psychological impact of dental aesthetics. A detailed summary of their responses is given in table 5.

Table 3: Summary of PIDAQ Responses

Sr. No.	Variables	Not at all n (%)	A little n (%)	Somewhat n (%)	A lot n (%)	Absolutely n (%)
Dental self confidence						
1	I am proud of my teeth.	0 (0)	0 (0)	90 (34)	105 (39)	73 (27)
2	I like to show my teeth when I smile.	5 (2)	0 (0)	76 (28)	98 (36)	89 (33)
3	I am pleased when I see my teeth in the mirror.	0 (0)	8 (3)	126 (47)	73 (27)	61 (23)
4	My teeth are attractive to others.	0 (0)	26 (10)	102 (38)	110 (41)	30 (11)
5	I am satisfied with the appearance of my teeth.	1 (0.4)	28 (10)	59 (22)	85 (32)	95 (35)

6	I find my tooth position to be very nice.	0 (0)	30 (11)	106 (40)	101 (38)	31 (12)
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Social Impact						
7	I hold myself back when I smile so my teeth don't show so much.	76 (28)	66 (26)	80 (30)	23 (9)	20 (8)
8	If I don't know people well, I am sometimes concerned what they might think about my teeth.	77 (29)	119 (44)	67 (25)	0 (0)	5 (2)
9	I am afraid other people could make offensive remarks about my teeth.	110 (41)	119 (44)	16 (6)	8 (3)	15 (6)
10	I am somewhat inhibited in social contacts because of my teeth.	118 (44)	115 (43)	18 (7)	0 (0)	17 (6)
11	I sometimes catch myself holding my hand in front of my mouth to hide my teeth.	33 (12)	87 (33)	97 (36)	27 (10)	24 (9)
12	Sometimes I think people are staring at my teeth.	109 (41)	97 (36)	15 (6)	21 (8)	26 (10)
13	Remarks about my teeth irritate me even when they are meant jokingly.	54 (20)	97 (36)	25 (9)	58 (22)	34 (13)
14	I sometimes worry about what members of the	68 (25)	43 (16)	63 (24)	75 (28)	19 (7)

	opposite sex think about my teeth.					
Psychological Impact						
15	I envy the nice teeth of other people.	61 (23)	105 (39)	53 (20)	20 (8)	29 (11)
16	I am somewhat distressed when I see other people's teeth.	114 (43)	77 (29)	42 (16)	23 (9)	12 (5)
17	Sometimes I am somewhat unhappy about the appearance of my teeth.	52 (19)	71 (27)	106 (40)	29 (11)	10 (4)
18	I think most people I know have nicer teeth than I do.	95 (35)	43 (16)	39 (15)	67 (25)	24 (9)
19	I feel bad when I think about what my teeth look like.	50 (19)	83 (31)	61 (23)	50 (19)	24 (9)
20	I wish my teeth looked better.	26 (10)	62 (23)	49 (18)	33 (12)	98 (37)
Aesthetic Concern						
21	I don't like to see my teeth in the mirror.	57 (21)	36 (13)	72 (27)	39 (15)	64 (24)
22	I don't like to see my teeth in photographs.	70 (26)	43 (16)	25 (9)	20 (8)	110 (41)
23	I don't like to see my teeth when I look at a video of myself.	77 (29)	44 (16)	12 (5)	55 (21)	80 (30)

4.4. Self-perceived Malocclusion:

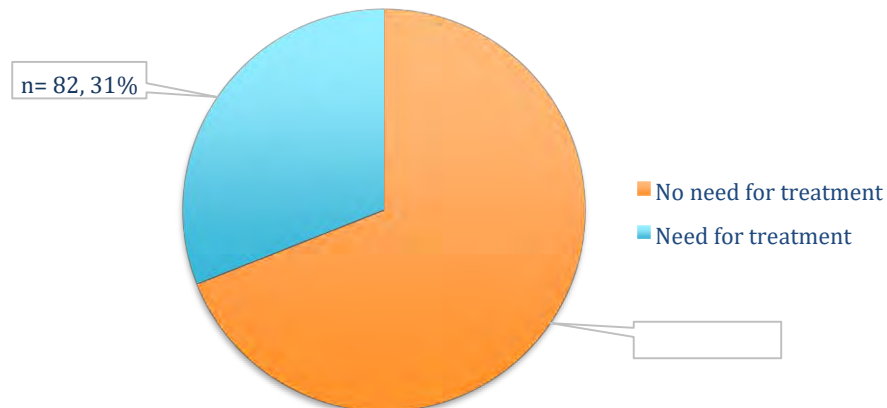


Figure 5:

Self-perceived Malocclusion

In present study, it was found that nearly 31% of the respondents (n= 82) reported self-perceived malocclusion as shown in figure 6.

4.5. Association between Perceived dental aesthetics and Psychosocial Well-being among young adults:

In current study, association between perceived dental aesthetics (malocclusion) and psychosocial well-being of young adults was calculated using Independent Sample T test.

A detailed summary of their results is presented in table 6.

Table 4: Association between Perceived dental malocclusion and psychosocial wellbeing among young adults

Sr. No.	Sociodemographic variables	N	Mean ± S.D.	t-test (df)	P value
1	Perceived Dental aesthetics				
	Self-perceived malocclusion	82	64.91 ± 11.05	0.865 (266)	0.388
No self-perceived malocclusion	186	66.46 ± 14.37			

It was found that self-perceived dental aesthetics is not significantly associated with psychosocial well-being of the young adults (p value >0.05).

Table 5: Association between Sociodemographic characteristics and psychosocial well-being among young adults (Independent T test)

Sr. No.	Sociodemographic variables	N	Mean \pm S.D.	T-test (df)	P value
1	Gender Male	129	65.06 \pm 12.97	1.08 (266)	0.280
	Female	139	66.84 \pm 13.85		
2	Marital status Single	168	67.37 \pm 13.33	2.20 (266)	0.029
	Married	100	63.66 \pm 13.37		
3	University Public	135	18.82 \pm 6.18	1.27 (266)	0.204
	Private	133	17.95 \pm 4.98		
4	Comfortable with the appearance of teeth Yes	111	63.81 \pm 15.63	2.24 (266)	0.026
	No	157	67.52 \pm 11.46		
5	Want to improve dental appearance with orthodontic treatment Yes	153	67.86 \pm 10.01	2.65 (266)	0.008
	No	115	63.50 \pm 16.69		
6	Effect of dental appearance on social life Yes	150	66.61 \pm 11.84	0.86 (266)	0.389
	No	118	65.19 \pm 15.25		

Results of independent sample t-test revealed that marital status of the respondents was significantly associated with psychosocial well-being of the respondents (p value <0.05) with married respondents showing a slightly improved psychosocial well-being mean score (63.66 \pm 13.37) as compared to singles (67.37 \pm 13.33). Similarly, respondents who were comfortable with their dental appearance reported improved levels of psychosocial

wellbeing (63.81 ± 15.63) as compared to those who were not comfortable with their dental appearance (67.52 ± 11.46), and the results were statistically significant (p value <0.05). Furthermore, respondents who reported that they would like to improve their dental appearance through orthodontic treatment, presented higher mean score for psychosocial well-being (67.86 ± 10.01) as compared to those who did not want to improve their dental appearance (63.50 ± 16.69) (p value <0.05).

Table 6: Association between sociodemographic characteristics and Psychosocial well-being of young adults (One Way ANOVA)

Sr. No.	Sociodemographic variables	N	Mean \pm S.D.	F-test (df)	P value
1	Age				
	18-21 years	115	67.75 ± 13.97	3.47 (267)	0.032
	22-25 years	78	66.62 ± 12.36		
26-29 years	75	62.63 ± 13.25			
2	Education				
	Undergraduate	176	67.71 ± 12.67	21.79 (267)	0.0001
	Graduate	78	65.90 ± 12.90		
Postgraduate	14	44.79 ± 6.29			
3	Income				
	Low	93	65.29 ± 11.71	8.22 (267)	0.0001
	Moderate	101	62.96 ± 13.79		
High	74	70.99 ± 13.74			

The results of One-way ANOVA showed that age of the respondents, their education level, and income level were statistically significant with their psychosocial well-being ($p<0.05$). Results showed that age of the respondents showed a decreasing trend of psychosocial well-being mean score with older respondents (26-29 years) having slightly improved

psychosocial well-being (62.63 ± 13.25) as compared to younger age groups. Similarly, education level of the respondents also found to be significantly affecting their psychosocial well-being as respondents with higher education level (postgraduate) presented improved psychosocial well-being (44.79 ± 6.29) as compared to undergraduate (67.71 ± 12.67) and graduate students (65.90 ± 12.90).

Furthermore, it was also noted that income level of the young adults also significantly influenced their psychosocial well-being and there was an increasing trend of mean score for psychosocial well-being with increasing income level. It was found that respondents with high-income level presented low psychosocial well-being (70.99 ± 13.74) as compared moderate (62.96 ± 13.79) and low-income groups (65.29 ± 11.71).

CHAPTER V: DISCUSSION

The physiological, physical and psychological well-being plays a crucial role in the maintenance of social interactions of the people. The clinical evaluation and findings have provided substantial evidence elaborating the association of the psychological and social well-being of the individuals with the self-perceived dental aesthetics (MAHMOOD & Anwar, 2014 and Zaidi et al., 2020). It has been identified that the psychosocial health of the individuals can be significantly affected due to adverse oral conditions and dental aesthetics. Currently; assessment of psychosocial factors of malocclusion has been considered an important part of the orthodontic examination in adults. The aim of the current study was to assess the psychosocial impact of dental aesthetics in students and its relationship to various sociodemographic factors. Previous research has found that the PIDAQ achieves a reliable test quality in adults, regardless of their cultural background. Prior studies endorse the construct validity of the PIDAQ with regards to aspects related to individual's self-perceptions of their oral health, dental aesthetics, factorial structure, and outcomes of orthodontic treatment.

In current study, more than half of the respondents were females (n= 139, 52%). In current study, most of the respondents were undergraduate students (n= 176, 66%).As the majority of age group of respondents was between 18-21years.In previous study, university affiliation was found to be associated with PIDAQ scores where students from one particular university were significantly less impacted particularly in the dental and social domains than students from other universities. This may be explained by the fact that it was a private university and studies have shown that students from private schools demonstrate higher self-esteem than public school students (Taibah SM,2017).

Currently in this study it was found that more than half of the study participants were not feeling comfortable with the appearance of their teeth (n= 157, 59%). It was found that majority of the respondents reported their dental appearance affected their social life activities (n= 150, 56%). In another study, the results did not show any significant association between PIDAQ scores and increasing age which may be explained by the narrow age range of the study sample reducing the probability of detecting difference between different age groups. However, in this study the results of One-way ANOVA showed that age of the respondents, their education level, and income level were statistically significant with their psychosocial well-being ($p < 0.05$). Results showed that age of the respondents showed a decreasing trend of psychosocial well-being mean score with older respondents (26-29 years) having slightly improved psychosocial well-being (62.63 ± 13.25) as compared to younger age groups. It may be explained by decreased effectiveness on social life with respect to dental aesthetics and age.

Current results revealed that most of the respondents wanted to improve the appearance of their teeth through orthodontic treatment (n=153, 57%). Which is in agreement with reports of previous studies that with advancing knowledge, students become more critical, aware and concerned with their dental appearance.

Results of independent sample t-test revealed that marital status of the respondents was significantly associated with psychosocial well-being of the respondents (p value < 0.05).

Single people had a more impact on psychosocial wellbeing as they demonstrate higher self-esteem.

In current study, income level of the young adults also significantly influenced their psychosocial well-being and there was an increasing trend of mean score for psychosocial well-being with increasing income level. It was found that respondents with high-income level presented low psychosocial well-being (70.99 ± 13.74) as compared moderate (62.96 ± 13.79) and low-income groups (65.29 ± 11.71). These results are in contradiction with the view that economic status is a key determinant of health, reaffirming a gradient in which individuals higher in the social hierarchy enjoy better health and self-esteem at each higher step of occupational grade via materialistic, behavioral and psychosocial pathways. The contradictory results may be due to the fact that although the students with higher income displayed positive dental self-consciousness due to easier access to dental treatment, they may be overcritical of even the smallest dental deviation causing greater impact on their psychosocial well-being.

5.1 Limitations

The limitations of this study were as the sample included in the study were extensively females hence gender differences could not be explored properly. Although other studies have reported significant differences in PIDAQ scores between students from different college departments, a clear explanation for this finding could not be determined which could be an area for further investigation. Another limitation of the current study was the fact that self-perceived dental aesthetics was measured subjectively only and comparing the results to normatively assessed dental aesthetics using objective measures may have provided greater insight into the relationship of malocclusion (objectively measured) with self-perceived dental aesthetics and its effects on psychosocial well-being.

5.2 Strengths

From the aforementioned review of the previously published literature, it has been observed that the studies have failed to provide adequate information in relation to the impact on oral health on the mental health of individuals and their overall health and self-esteem. Henceforth, the present study has been conducted and adopted different research techniques and tools to assess the association of dental aesthetics with psychological wellbeing among people in Rawalpindi. The research methodology adopted and presented has played an essential role in bridging the identified gaps as well as addressed research problem. It evaluates the association or relationship of self-perceived dental aesthetics with psychosocial well-being. It analyzes the impacts of dental aesthetics on the self-esteem, confidence, social interactions and behavioral associations of the young adults of Rawalpindi. It checks association of demographics and dental aesthetics with psychosocial well-being.

CHAPTER VI: CONCLUSIONS AND WAY FORWARD

Dental aesthetics was found to affect the psychological well-being of the subjects. Age, marital status, level of education, and level of income were all factors that significantly affected self-perceived aesthetics and psychosocial well-being. Due to the fact that patients' perceptions of psychosocial impact related to dental esthetics are multifactorial and are influenced by the subjective perceptions of the patient, care should be taken when planning dental services and in guiding public health practices by considering the patients' perceptions of their dental appearance as an important aspect of patient management, achieving higher levels of patient satisfaction, minimizing the risks of overtreatment and reducing costs by identifying those with a greater likelihood of benefiting from treatment.

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Appendix A - Questionnaire

Association of Perceived Dental Aesthetics with Psychosocial Wellbeing among Young Adults of Rawalpindi

Consent: Your participation is voluntary, I provide consent for this Study

- Yes
- No

Please rate the following according to the provided scale:

1	2	3	4	5
Not at all	A little	Somewhat	A lot	Absolutely

1. Age

- 18-21
- 22-25
- 26-29

2. Gender

- Male
- Female
- Others

3. Educational Status

- Undergraduate
- Graduate
- Post-graduate

4. Household Income Low

- Moderate
- High

5. Marital Status Single

- Married

6. University

- Private
- Public

7. Field of Education Computer

- Medical
- Arts
- Engineering

8. Have you had orthodontic treatment in past? Yes

- No

9. Do you feel comfortable with appearance of your teeth when smiling?

- Yes
- No

10. Would you like to improve your dental appearance by orthodontic treatment

- Yes
- No

11. Have your social life affected by your dental appearance

- Yes
- No

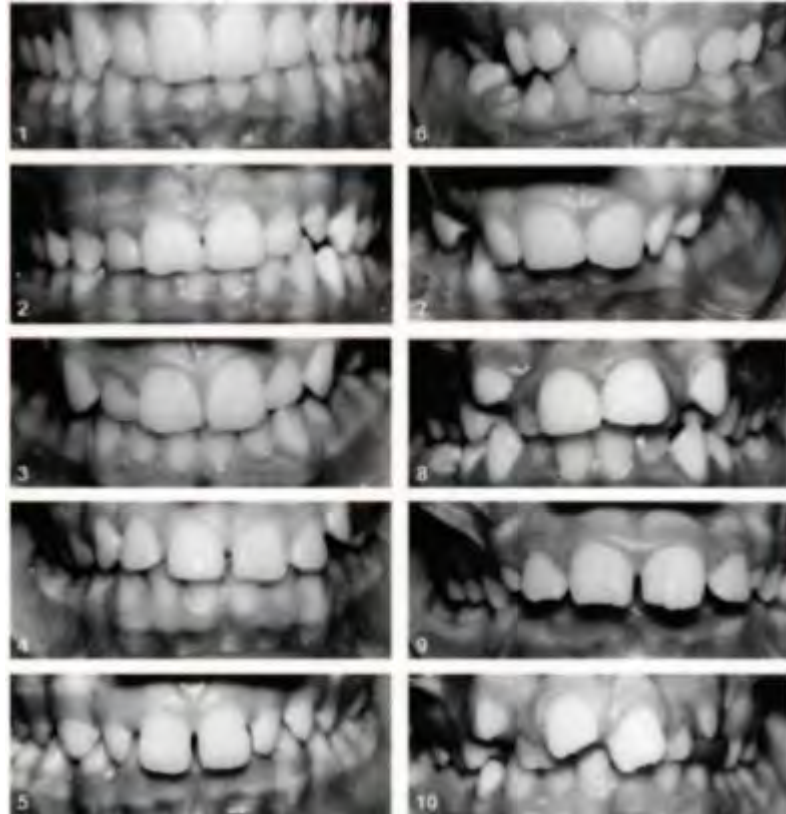
Items of PIDAQ according to four factors

DSC	1. I am proud of my teeth. 1 2 3 4 5
	2. I like to show my teeth when I smile. 1 2 3 4 5
	3. I am pleased when I see my teeth in the mirror. 1 2 3 4 5
	4. My teeth are attractive to others. 1 2 3 4 5
	5. I am satisfied with the appearance of my teeth. 1 2 3 4 5
S1	6. I find my tooth position to be very nice. 1 2 3 4 5
	7. I hold myself back when I smile so my teeth don't show so much. 1 2 3 4 5
	8. If I don't know people well I am sometimes concerned what they might think about my teeth. 1 2 3 4 5
	9. I am afraid other people could make offensive remarks about my teeth. 1 2 3 4 5
	10. I am somewhat inhibited in social contacts because of my teeth. 1 2 3 4 5

	11. I sometimes catch myself holding my hand in front of my mouth to hide my teeth. 1 2 3 4 5
	12. Sometimes I think people are staring at my teeth. 1 2 3 4 5
	13. Remarks about my teeth irritate me even when they are meant jokingly. 1 2 3 4 5
	14. I sometimes worry about what members of the opposite sex think about my teeth. 1 2 3 4 5
P1	15. I envy the nice teeth of other people. 1 2 3 4 5
	16. I am somewhat distressed when I see other people's teeth. 1 2 3 4 5
	17. Sometimes I am somewhat unhappy about the appearance of my teeth. 1 2 3 4 5
	18. I think most people I know have nicer teeth than I do 1 2 3 4 5
	19. I feel bad when I think about what my teeth look like. 1 2 3 4 5
	20. I wish my teeth looked better. 1 2 3 4 5
AC	21. I don't like to see my teeth in the mirror. 1 2 3 4 5
	22. I don't like to see my teeth in photographs. 1 2 3 4 5
	23. I don't like to see my teeth when I look at a video of myself. 1 2 3 4 5

According to the 10 black and white photographs of anterior teeth shown to you, which photograph do you feel resembles your dentition most closely? ○ 1

- 2 ○
- 3 ○ 4
- 5 ○
- 6 ○ 7
- 8 ○
- 9 ○ 10



Appendix B – Consent Form

Informed Consent

Title of Study

Association of Perceived Dental Aesthetics with Psychosocial wellbeing among young adults of Rawalpindi.

Researcher:

Kiran Raffi, MSPH student, Al Shifa School of public health Rawalpindi.

Purpose:

The aim of the research was to evaluate how much of an impact dental aesthetics has on psychosocial behaviour.

Time Required:

It is anticipated that it will take approximately 15 minutes of your time to complete the survey.

Voluntary Participation:

Participation in this study is voluntary. You have the right to not open or complete the anonymous survey.

Confidentiality:

Data from the surveys will be completely anonymous and reported in aggregate form. Your name will not be collected at any time. After data collection, the survey and demographic responses will be password-protected. Once submitted the researcher will not be able to withdraw responses due to anonymity and de-identified data.

Risks:

The study has no significant risk and there are no anticipated risks in this study.

Benefits:

There are no direct benefits associated with participation in this study the potential benefit from this research is study the effects of aesthetics on quality of life.

Payment:

You will receive no payment for participating in the study.

Right to Withdraw from the Study:

You have the right to withdraw from the study at any time before submitting the survey without penalty.

If you have questions about the study, contact the following individual:

Kiran Raffi

Kiranraffi@gmail.com

Cell no 03005159748

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Name of Participant _____

Signature of Participant _____

Date _____

Annexure C- Gantt chart

Activities	March 2022	April 2022	May 2022	June 2022	July 2022	August 2022	September 2022
Literature search							
Synopsis writing and IRB approval							
Pilot testing							
Data collection and entry							
Data analysis							
Write-up							
Thesis submission							

Annexure D- Budget

Budget item	Transport	Stationery and internet	Printing	Publishing
Pilot testing	500 Rs/-	6000 Rs/-	4000 Rs/-	-
Data collection	10,000 Rs/-	8,000 Rs/-	-	-
Thesis write-up	1,000 Rs/-	9,000 Rs/-	6,000 Rs/-	25,000 Rs/-
Total expenditure	11,500 Rs/-	23,000 Rs/-	10,000 Rs/-	25,000 Rs/-
Grand total	69,500 Rs/-			

Annexure E- IRB Letter



AL-SHIFA SCHOOL OF PUBLIC HEALTH
PAKISTAN INSTITUTE OF OPHTHALMOLOGY
AL-SHIFA TRUST, RAWALPINDI

No. MSPH-IRB/12-28
Date: 01st Oct, 2021

TO WHOM IT MAY CONCERN

This is to certify that Kiran Raffi D/O Muhammad Anjum Raffi is a student of Master of Science in Public Health (MSPH) final semester at Al-Shifa School of Public Health, PIO, Al-Shifa Trust Rawalpindi. He has to conduct a research project as part of curriculum & compulsory requirement for the award of degree by the Quaid-I-Azam University, Islamabad. His research topic which has already been approved by the Institutional Review Board (IRB) is "Association of Perceived Dental Aesthetics with psychosocial well-being among young adults of Rawalpindi, Pakistan".

Please provide him necessary help and support in completion of the research project. Thank you.

Sincerely,

Dr. Ayesha Babar Kawish
Head of Department, MSPH
School of Public Health, PIO
Al-Shifa Trust, Rawalpindi