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Oral Health-Related Quality of Life among Patients with Gastrointestinal Diseases in Fatima Memorial Hospital, Lahore

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Abstract

Objective: This research aimed to evaluate the quality of life related to oral health among patients with gastrointestinal diseases in Fatima Memorial Dental Hospital Lahore, Punjab Pakistan.

Setting: Tertiary care at Fatima Memorial Hospital.

Materials & Methods: Conducting a cross-sectional survey, this study assessed 91 gastrointestinal patients using a convenience sampling technique. The Oral Health Impact Profile – OHIP 14 questionnaire was utilized, and the study received approval from the Institutional Review Board. Responses were statistically analysed and expressed in percentages to highlight significance.

Results: The findings indicated a significant lack of awareness and knowledge regarding oral hygiene practices and their impact on systemic health. The mean OHIP-14 score was determined to be 33.49 ± 9.65 (mean $\pm$ standard deviation), illustrating the considerable impact of gastrointestinal diseases on oral health, this likely reflects a lack of concern or awareness rather than the absence of problems.

Although, majority of candidates answered NEVER to our questions regarding oral issues it does not mean that they do not face any kind of problem like taste and eating etc. but they do not bother to consider proper oral hygiene due to a lack of awareness.

Conclusion: There is a pressing need for comprehensive educational programs to improve oral hygiene practices and awareness.

Keywords: Oral Hygiene, Systemic Health, Awareness, Quality of Life.

Introduction

The World Health Organization (W.H.O.) defines health as “A state of complete physical, mental and social well-being”^[1]. “Oral health is multifaceted concept that includes the ability to speak, smile, taste, chew, swallow and convey emotions through facial expressions without discomfort, pain, or disease of the craniofacial complex^[2].”

Oral health-related quality of life (OHRQoL) encompasses a subjective evaluation of an one’s oral health,

functional well-being, expressive welfare prospects, and gratification with attention of satisfaction with oral health care. Oral health-related quality of life OHRQoL has some importance for general well-being. It is recognized as an important component of general well being and is a significant part of the World Health Organization’s Global Oral Health Program. It classifies the What, Why, and How of Oral Health Related Quality of Life with presentation of oral fitness theoretical model^[3].

The Oral Health Impact Profile (OHIP) is a tool that measures the impact of oral health

on quality of life. The OHIP-14, a shortened version of the original OHIP with 49 items ^[4], evaluates aspects such as functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap ^[5]. This tool has been validated for its reliability and cross-cultural applicability. ^[6-8]

Oral sicknesses like periodontal diseases, dental caries, tooth loss, oral mucosal wounds oropharyngeal cancer, and orodental complications are the major causes of worldwide health problems. Oral diseases, particularly the dental caries and the periodontal diseases are still chief problems worldwide^[9] Dental caries are established to be more common in Asian and Latin American zones and least common in African countries.^[10] The major reasons causing dental caries are Sugars mainly sucrose, Microorganisms, Pitiable oral hygiene, and time^[11]

Oral health entails freedom from periodontal disease, tooth decay, tooth loss, oral or throat cancer, mouth and facial pain, oral infections, sores and other situations like restricting biting, chewing, smiling, or speaking, thereby affecting

psycho-social well-being. ^[12-13] Health-related quality of life (HRQoL) instruments depend on a abstract framework predicting daily functioning and well-being through individual perceptions of physical, emotional and social health. ^[14]

Oral cavity changes linked to systemic diseases, including gastrointestinal issues, are well-established. More research into the oral connections with inflammatory bowel disease is advised for better understanding. Recognizing oral manifestations of systemic diseases early can prompt timely investigations and management. Multidisciplinary patient management ensures comprehensive healthcare delivery. ^[15]

Oral health is considerably bargained due to gastroenterological (inflammatory, ulcerative, neoplastic, and reflux diseases) which pointers to an range of oral appearances such as burning-mouth disorder, halitosis, tooth erosion, xerostomia, oral ulceration, dysphagia, dysgeusia, growth of unprincipled infections, with the gingival and periodontal disease, and numerous hard/soft-tissue

problems/manifestations.^{[[16-19]} Direct interaction with regurgitated gastric acid is primarily tangled with erosions of teeth and bone substance in patients with gastroesophageal reflux disease (GERD). Comparing patients with common reflux symptoms to controls, hospital-based learning revealed that 64.5% of patients reported having oral erosions.^[20] Additionally, other research suggests that the origin of gastric precancerous sores and gastric cancer may be related to dental health parameters significant to periodontitis.^[21] The best of our knowledge, OHRQoL in the context of gastroenterology has not been well studied, despite being the original method for evaluating OHRQoL in this population with a particular condition.^[22-23]

GER (gastroesophageal reflux) is prevalent in infants and children. If complications arise, it progresses to GERD (gastroesophageal reflux disease). Besides known issues such as hematemesis, vomiting, breathing issues, and stunted growth, GERD can lead to dental erosion. Acid exposure speeds up tooth structure loss, especially in primary teeth due to their less dense enamel and dentin as related to permanent teeth.^[24]

Dental erosion, or corrosion, results from non-bacterial tooth surface loss due to chemical or electrolytic processes, mainly involving acids. These acids come from both internal (gastric juices) and external (dietary, medicinal, occupational, recreational) sources. Alkaline bile juices from duodenogastroesophageal regurgitation (DGER) are unlikely to cause tooth erosion. Acid regurgitation is more likely to cause extraesophageal symptoms than DGER. This is contrary to what was previously thought, even in refractory patients with GERD that does not respond to PPI therapy.^[25-26]

Oral health is the absence of pain, infections, decay, tooth loss, and oral cancers, impacting biting, chewing, smiling, or speaking, and affecting psychosocial well-being. HRQoL tools measure daily function and well-being through subjective perceptions of health.^[27]

The oral microbiota plays a vital part in oral health. Dental caries results from bacterial fermentation of carbohydrates, leading to tooth demineralization. Periodontitis, an inflammatory response, can beget collagen attachment loss between teeth and bone, leading to tooth loss. While formerly studies concentrated on individual pathogens, recent

advancements in culture-independent technology allow researchers to explore the entire oral microbial community's diversity and function. still, studies have been limited, constantly fastening on single oral conditions and individualities with good dental care access. ^[28] therefore, Dentists and gastroenterologists aim to identify oral and gastric conditions linked to the gastrointestinal system, potentially forming in the oral depression. ^[29]

Objectives

The primary aim of this study was to evaluate the oral health-related quality of life among patients diagnosed with gastrointestinal diseases.

Methods

In this study, a sample of 91 patients was selected with a 5% level of significance, a 10% margin of error, and a known prevalence of 60.5% for *H. pylori* in gastrointestinal-diseased patients. Convenient sampling was employed, and data were collected from Fatima Memorial Hospital. Inclusion criteria encompassed patients visiting the Outpatient Department (OPD) and those admitted to the Department of Gastroenterology at Fatima Memorial Hospital, while patients with concurrent

gastroenterological conditions were excluded.

Upon approval of the synopsis, data collection commenced utilizing the Oral Health Impact Profile-14 (OHIP-14) questionnaire to gather the relevant information. The collected data were subsequently analysed using the Statistical Package for the Social Sciences (SPSS) software, version 23.0®.

Results

Univariate Analysis

The study sample consisted of 91 participants recruited from Fatima Memorial Dental Hospital in Shadman, Lahore. The demographic analysis indicated a higher proportion of female participants (59.3%) as compared to males (40.74%). Most participants belonged to the 24-40 age group, with smaller numbers in 15-23 and 41-60 age groups.

Total OHIP-14 Score:

Within the sampled population, the mean total OHIP-14 score was calculated to be 33.49 ± 9.65 , suggesting a significant effect of gastrointestinal disorders on oral health.

There are two main parts of Questionnaire:

- a) The first sector includes general evidence about the participants for example age, gender, education, profession, etc.

- b) In the second part, the participants were asked about daily life problems regarding taste and eating, etc. due to their gastro issue.

Table 2

Gender Distribution:

The distribution of gender among participants is summarized in Table 1. The study included a total of 37 (40.7%) male and 54 (59.3%) female contributors.

Gender	Frequency	Percentage
Male	37	40.7
Female	54	59.3
Total	91	100.0

Table 1

Age Standard Deviation:

Table 2 presents the average age and standard deviation within gender groups. Specifically, male participants had an average age of 31.49 years (± 10.58), while female participants averaged 34.87 years (± 8.80).

Table 3

Gender	Mean	N	Std. Deviation
Male	31.486	37	10.5768
Female	34.870	54	8.8040
Total	33.495	91	9.6533

Responses are given as 0(Never), 1(Hardly Ever), 2(Occasionally), 3(Fairly Often), 4(Very Often)							
List of Questions on the OHP-14 Questionnaire	Responses						
	0 n (%)	1 n (%)	2 n (%)	3 n (%)	4 n (%)	Mean	S.D
<i>Functional Limitation</i>							
OHP-1	65 (71.4%)	4 (4.4%)	13 (14.3%)	2 (2.2%)	7 (7.7%)	0.9495	0.8147
OHP-2	40 (44.0%)	11 (12.1%)	24 (26.2%)	5 (5.5%)	11 (12.11%)	1.7802	1.1681
<i>Physical Pain</i>							
OHP-3	51 (56.0%)	6 (6.6%)	17 (18.7%)	4 (4.4%)	13 (14.3%)	1.956	1.2914
<i>Psychological discomfort</i>							
OHP-4	59 (64.8%)	6 (6.6%)	14 (15.4%)	3 (3.3%)	8 (8.8%)	1.4835	1.2548
OHP-5	18 (19.8%)	5 (5.5%)	14 (15.4%)	49 (53.8%)	5 (5.5%)	2.4835	1.3156
<i>Physical disability</i>							
OHP-6	47 (51.6%)	9 (9.9%)	15 (16.5%)	10 (11.0%)	10 (11.0%)	1.7363	1.2454
OHP-7	56 (61.5%)	4 (4.4%)	13 (14.3%)	12 (13.2%)	6 (6.6%)	1.6264	1.3233
OHP-8	46 (50.5%)	10 (11.0%)	16 (17.6%)	7 (7.7%)	12 (13.2%)	1.7582	1.3051
<i>Psychological disability</i>							
OHP-9	63 (69.2%)	8 (8.8%)	3 (3.3%)	6 (6.6%)	11 (12.1%)	1.9011	1.2014
OHP-10	38 (41.8%)	6 (6.6%)	27 (29.7)	14 (15.4%)	6 (6.6%)	2.0219	1.3987
<i>Social disability</i>							
OHP-11	60 (65.9%)	5 (5.5%)	14 (15.4%)	3 (3.3%)	9 (9.9%)	1.7912	1.2528
OHP-12	62 (68.1%)	10 (11.0%)	7 (7.7%)	5 (5.5%)	7 (7.7%)	1.7253	1.2971
OHP-13	58 (63.7%)	6 (6.6%)	13 (14.3%)	8 (8.8%)	6 (6.6%)	1.8407	1.3409
<i>Handicap</i>							
OHP-14	74 (81.3%)	5 (5.5%)	5 (5.5%)	0 (0%)	7 (7.7%)	0.7802	1.0956

Question 1: Pronunciation Difficulty Due to Gastrointestinal Problems

Participants were questioned about whether they had trouble pronouncing words because of gastrointestinal issues that affected their mouth, teeth, or dentures. Table 1 summarizes the responses from the collected sample. The majority of participants (71.4%) said they had never had digestive problems with their teeth, mouth, or dentures that caused them to have difficulty pronouncing words. A small proportion of participants reported experiencing pronunciation difficulties occasionally (14.3%), while fewer individuals reported experiencing such difficulties fairly often (2.2%) or very often (7.7%).

Question 2: Impact of Gastrointestinal Problems on Sense of Taste

Participants were asked if they thought that digestive issues affecting their mouth, teeth, or dentures made their sense of taste worse. The distribution of answers from the gathered sample is shown in Table 2.

Of the participants, 44.0% said they had never experienced a worsening of their sense of taste as a result of digestive issues with their mouth, teeth, or dentures. A smaller proportion reported experiencing worsening taste occasionally (26.4%), while fewer participants reported experiencing such

issues hardly ever (12.1%), fairly often (5.5%), or very often (12.1%).

Question 3: Experience of Painful Aching in the Mouth

Participants experienced painful aching in the mouth attributed to gastrointestinal issues affecting teeth, oral health, or dentures. Table 3 displays the distribution of responses from the collected sample.

The majority of participants (56.0%) reported never experienced painful aching in their mouth due to these gastrointestinal problems with their teeth, mouth, or dentures. A smaller percentage reported experiencing such pain hardly ever (6.6%), occasionally (18.7%), fairly often (4.4%), or very often (14.3%).

Question 4: Discomfort in Eating Foods Because of Oral Health Problems

This investigated whether participants experienced discomfort while eating certain foods due to gastrointestinal issues affecting their mouth, teeth, or dentures. Table 4 provides an overview of the responses from the collected sample.

The majority of participants (64.8%) reported never experiencing discomfort while eating foods because of GIT issues. A

small proportion reported experiencing discomfort hardly ever (6.6%), occasionally (15.4%), fairly often (3.3%), or very often (8.8%). One participant (1.1%) did not respond.

Question 5: Self-Consciousness

Participants were asked if issues with their mouths, teeth, or dentures had ever made them feel self-conscious. The responses from the collected sample are summarized below:

This suggests that the majority of participants (53.8%) frequently felt self-conscious about their teeth, oral health, or dentures as a result of gastrointestinal issues.

Question 6: Have you felt tense because of problems with your teeth, mouth, or dentures?

According to the results, 51.6% said they had never experienced tension from gastrointestinal. Additionally, 9.9% mentioned hardly ever experiencing tension in such circumstances. About 16.5% of respondents indicated occasionally feeling tense, while 11% reported feeling tense fairly often. Similarly, 11% of participants stated feeling tense very often due to these issues.

Question 7: Has your diet been unsatisfactory because of problems with your teeth, mouth, or dentures?

The majority of participants, accounting for 61.5%, indicated that they never felt their diet was unsatisfactory due to gastrointestinal issues. Only 4.4% reported hardly ever feeling unsatisfied with their diet in such circumstances. However, 14.3% of respondents mentioned occasionally feeling dissatisfied, while 13.2% reported feeling fairly often unsatisfied. Additionally, 6.6% of participants stated feeling very often unsatisfied with their diet due to these issues.

Question 8: Have you had to interrupt meals because of problems with your teeth, mouth, or dentures?

Based on the data from the collected sample provided in the table below, it is observed that 50.5% of the participants reported never having to interrupt their meals because of gastrointestinal issues. Additionally, 11.0% of respondents stated that they hardly ever experienced meal interruptions because of the mentioned problems. However, 17.6% of candidates answered "occasionally," indicating sporadic interruptions. Moreover, 7.7% of participants reported facing this

issue fairly often, while 13.2% replied with "very often."

Question 9: Have you found it difficult to relax because of problems with your teeth, mouth, or dentures?

A significant portion of respondents, constituting 69.2%, reported never experiencing difficulty in relaxing due to gastrointestinal issues associated with their teeth, mouth, or dentures. Conversely, 8.8% of participants indicated hardly ever encountering such challenges. A smaller proportion of 3.3% responded with "occasionally," suggesting intermittent difficulties, while 6.6% admitted facing this issue fairly often. Additionally, 12.1% of candidates replied with "very often," signifying a more frequent struggle to relax.

Question 10: Have you been a bit embarrassed because of problems with your teeth, mouth, or dentures?

According to the data presented in the table, 41.8% of respondents reported never experiencing embarrassment due to gastrointestinal issues. A smaller proportion, comprising 6.6% of candidates, indicated hardly ever feeling embarrassed under similar circumstances. However, a considerable percentage of 29.7% admitted

to occasionally experiencing embarrassment. Additionally, 15.4% of respondents acknowledged facing this problem fairly often, while 6.6% replied with "very often," indicating a frequent sense of embarrassment.

Question 11: Have you been irritable with other people because of problems with your teeth, mouth, or dentures?

According to the provided data, a significant majority of respondents, accounting for 65.9%, indicated that they had never been irritable due to gastrointestinal issues. A smaller proportion, comprising 5.5% of candidates, reported hardly ever feeling irritable under similar circumstances. However, 15.4% of respondents admitted to occasionally experiencing irritability, while 3.3% faced this problem fairly often. Additionally, 9.9% of candidates replied with "very often," indicating a frequent occurrence of irritability.

Question 12: Have you had difficulty doing your usual jobs because of problems with your teeth, mouth, or dentures?

A majority of respondents, comprising 68.1% of candidates, reported never experiencing difficulty in performing their

usual jobs due to gastrointestinal issues. However, 11% stated that they hardly ever encountered such difficulty. Additionally, 7.7% of candidates mentioned occasionally facing challenges in their jobs because of these problems. A smaller proportion of respondents, 5.5%, reported facing this issue fairly often, while another 7.7% replied with "very often."

Question 13: Have you felt that life in general was less satisfying because of problems with your teeth, mouth, or dentures?

The majority of respondents 63.7% stated that they had never felt that their life satisfaction was negatively impacted by digestive problems related to their teeth, mouth, or dentures. A smaller percentage, 6.6%, stated that they hardly ever felt life was less satisfying because of these problems. Additionally, 14.3% of respondents occasionally experienced a decrease in life satisfaction due to these issues. Meanwhile, 8.8% faced this problem fairly often, and 6.6% replied with "very often."

Question 14: Have you been totally unable to function because of problems with your teeth, mouth, or dentures?

A significant majority of respondents 81.3% reported never experiencing inability to function because of gastrointestinal issue related to teeth, mouth, or dentures. A small portion, comprising 5.5% of candidates, reported hardly ever feeling unable to function because of these problems. Similarly, another 5.5% answered occasionally yes. Interestingly, none of the candidates faced this problem fairly often, while 7.7% replied with "very often."

Discussion

Our research sheds light on a critical issue often overlooked in Pakistan: hygiene and its significance as a social concern. Despite most participants in our survey claiming they've never experienced health issues, this doesn't contradict the presence of underlying problems such as taste and eating difficulties. Relatively, it underscores a lack of awareness and attention to oral hygiene practices within the community.

Our study aimed to delve into the knowledge, habits, and behaviors related to care among the surveyed population. However, the results revealed a gap in understanding about measures and dental care practices, highlighting the urgent need

for health promotion initiatives at a population level.

Notably, our research stands out as one of the first in Pakistan to utilize the Oral Health Impact Profile (OHIP 14), focusing on Oral Health-Related Quality of Life (OHRQoL) among individuals with disorders. Our socio-demographic findings align with previous studies, emphasizing age, gender, and socio-economic status as significant factors.

Pakistan faces challenges in maintaining oral health due to prevalent risk factors such as addiction issues, unhealthy eating patterns, residing in rural areas, and limited socio-economic conditions. Neglecting health concerns, resorting to self-medication, and encountering difficulties in accessing healthcare services can heighten the risk of developing overall health issues.

Our research found correlations between compromised oral and systemic health and the quantity and kind of oral lesions. Notably, oral candidiasis emerged as particularly impactful, leading to symptoms such as xerostomia, altered taste sensation, and eating difficulties, ultimately resulting in weight loss. The severity of oral lesions was positively correlated with mean OHIP-

14 scores, highlighting the detrimental impact on OHRQoL.

In addition, our results highlight Pakistanis' high rates of self-medication and lack of health awareness, which are influenced by things like low socioeconomic status and low literacy. Addressing these barriers is crucial in improving oral health outcomes and overall well-being.

Future studies should examine how systemic diseases that manifest orally affect overall health-related quality of life (OHRQoL). It is also necessary to conduct clinical trials and potential observational studies to clarify the temporal correlation between diseases that gastroenterologists and dentists frequently treat.

In conclusion, our study underscores the importance of prioritizing oral health awareness and interventions to tackle the significant burden of oral diseases, their effects on overall health and quality of life in the Pakistani population. Effective implementation of targeted interventions and policies is essential to bridge existing gaps and promote better oral health outcomes nationwide.

Conclusion:

This study demonstrates that literate people are not adequately aware of oral health issues. Furthermore, most of the patients were unaware that systemic health is impacted by oral health. In order to create a healthy individual and society, it is therefore necessary to educate and disseminate knowledge about proper dental care and the prevention of dental diseases through dentists, outreach programs, and pertinent public health awareness initiatives. Therefore, it is suggested and believed that education regarding preventive measures for oral health should commence early during school, be easily incorporated into general health education, and be administered by qualified professionals. It is imperative that gastroenterologists, general practitioners, and dentists take a proactive approach to teaching their patients about the consequences of poor oral health and how it affects overall quality of life.

Recommendations:

- Integration of educational programs through schools, healthcare facilities, and community centers to address the proper oral health maintenance and proper cleaning aids techniques to benefit from this in actual life.
 - Target public health campaigns with the help of social media & networks to raise awareness about oral health & its effects on overall health and vice versa.
 - Encouraging the research and education of oral health for actual and continuous professional development of the communities.
- By executing these commendations and promoting a culture of oral health awareness and education, we can work to create healthier individuals and communities, ultimately enhancing the overall well-being and quality of life for all.

Limitations:

Following are some of the limitations of the current study:

- Data was collected specifically from Fatima Memorial Hospital, Lahore.
- External factors such as cultural norms, healthcare access, and socioeconomic status may affect oral health consequences but were not fully explored in this study.
- The study was conducted without funds or sponsorships, relying only on student researchers.

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