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A J S M U

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EDITORIAL

Medically Unexplained Somatic Symptoms: A Dilemma for all

Muhammad Iqbal Afridi

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Medically unexplained symptoms (MUS) are genuine, frequent clinical presentations and related to substantial amount of distress, functionality loss and great healthcare expenses. These symptoms are 'persistent bodily complaints for which adequate examination and investigation does not reveal sufficient explanatory structural or other specified pathology[1].

The prevalence varies between 30% and 50%. The proportion is higher in developing countries. Both in primary and in specialist care, caregivers frequently have to deal with or feel even confronted with patients consulting with medically unexplained (physical) symptoms.[2]

Extensive literature exist on the association between medically MUS, and psychopathology. Ibn-e-Sina (Avicenna), during Abbasian times, was the first to describe the effect of psyche on the body (what is presently known as psychosomatic disorder). Once Avicenna was asked to examine a young man whose illness had confused the brightest medical minds in the locality. Ibn-e-Sina talked extensively with the patient about his daily routine habits, carefully monitoring his pulse as they spoke. He observed that the young man's heart rate raced when the subject turned to the baker's shop to which it was revealed he visited regularly. The wise physician quickly noticed that the pulse accelerated further when he mention the baker's sister. The patient was diagnosed with love sickness, and his prescription of marriage fortunately consented by all, was proven to be effective. Thus, he demonstrated the importance of the bidirectional mind and body relationship.[3,4]

Many of these conditions persist leading to distress and disability besides huge socio-economic burden as a result of overutilization of the health services in the form of consultations, investigations and medications. Therefor it is not only a dilemma but also a great source of stress and distress for the sufferer (patients), formal (Therapist) and informal (family) caregivers. Following are some of the examples of such vague presentation in our sociocultural setup:

Gas/*gola*
Chakar (vertigo)
Badi (indigestion)
Garmi /Hadi Ka Bukhar (feeling feverish that cannot be detected by thermometer)
Qatra, patli munny (drops per urethra, thin semen oozing)
Leukorrhea
Cold and hot taseer (effects) etc.
Backache and Neck pain
Naaf Charna (Navel displacement)

The most commonly to reported medically unexplained symptom related (sexual) dysfunction in young males is "Dhat Syndrome", characterized as a psychiatric condition involving fear of losing semen through Ejaculation or nocturnal emission.[5]

Some of the terminology that has evolved to describe these conditions include; Functional Disorder, Psychosomatic Disorder, Somato-Psychic Disorder, Chronic Pelvic Pain, Fibromyalgia, Chronic Fatigue Syndrome, Irritable Bowel Syndrome, Hypochondriasis etc.

The latest edition of American Psychiatric Association, DSM-5 (Diagnostic and Statistical Manual of Mental Disorders)[6] 'has moved away from the need to have no medical explanation in order to make the diagnosis of 'medically unexplained symptoms' and gain access to appropriate treatment. The emphasis now is on symptoms that are substantially more severe than expected in association with distress and impairment. The diagnosis includes conditions with no medical explanation and conditions where there is some underlying pathology but an exaggerated response.'

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'The major diagnosis in this diagnostic class, Somatic Symptom Disorder, emphasises diagnosis made on the basis of positive symptoms and signs (distressing somatic symptoms plus abnormal thoughts, feelings, and behaviours in response to these symptoms) rather than the absence of a medical explanation for somatic symptoms. A distinctive characteristic of many individuals with somatic symptom disorders is not the somatic symptoms per se, but instead the way they present and interpret them.'

In DSM-5, 'somatoform disorders are now referred to as somatic symptom and related disorders. This classification reduces the number of these disorders and subcategories to avoid problematic overlap. Diagnoses of somatization disorder, hypochondriasis, pain disorder, and undifferentiated somatoform disorder have been removed. Individuals previously diagnosed with somatization disorder will usually have symptoms that meet DSM-5 criteria for somatic symptom disorder, but only if they have the maladaptive thoughts, feelings, and behaviors that define the disorder, in addition to their somatic symptoms.'

This type of disorders are categorized in the International Classification of Diseases eleventh edition (ICD-11)[7] of WHO that was officially released with effect on 1 January 2022 as Bodily Distress Disorder (BDD). In this condition the individual 'experiences distress due to persistent or recurrent bodily symptoms, to the degree the distress and preoccupation with symptoms interferes with daily functioning. It is mentioned in the ICD-11chapter 6 (Mental, Behavioural and Developmental Disorders) under the code 6C20. The most common bodily symptoms associated with Bodily Distress Disorder include pain (e.g., musculoskeletal pain, backache, and headache), fatigue, gastrointestinal and respiratory symptoms, although patients may suffer from any bodily symptoms.'

'Bodily Distress Disorder (BDD) is a diagnosis which might be given to an individual who experiences distress due to persistent or recurrent bodily symptoms, to the degree the distress and preoccupation with symptoms interferes with daily functioning. The term 'bodily distress' was introduced in 2005 after research in Denmark suggested that an umbrella term was able to adequately capture a number of overlapping functional somatic syndromes as well as Somatoform disorder.'[8]

Various therapeutic approaches have been advocated to manage such patients who may not have a demonstrable disease but they are at dys-ease (not at ease). These include: Empathy, Rational Reassurance, Evaluation of Equivocal Symptoms, Symptomatic Care, Emphasize Return to Normal Activities, Approach underlying Psychiatric Disorder(Anxiety/depression) Separately, applying Psychotherapy, Psychoanalysis, Cognitive behavioural therapy, Behaviour modification, Muscle relaxation therapy, Biofeedback, Hypnosis, Controlled breathing, Alteration in life circumstances, and stress management with healthy lifestyle. Apart from these non-pharmacological approaches, medication especially antidepressants and antipsychotics[9] can be used as depressive disorder can also have such type of somatic symptoms.[10]

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ORIGINAL ARTICLE

Comparison of Two and Three Stage Esophagectomies for Esophageal Carcinoma: Early Results in A High Output Center

Ambreen Abid[1], Tanveer Ahmad[2], Misauq Mazcuri[3], Nazish Sikander[3], Shifa Naz[4], and Rafia Zafar[4]

ABSTRACT

Objective: Despite the advancements inmanagement and surgical expertise, esophageal cancer continues to be the sixth most common cause of cancer related deaths. The aim of study was to compare various variables of Two-stage and Three-stage esophagectomies leading to the morbidity and mortality.
Methodology: A retrospective cross-sectional study was conducted in Thoracic Surgery Department, JPMC, Karachi from 2019-2021. All resectable and operatable tumors were included. Data was retrieved from a pre-formed data sheet and was analyzed using SPSS-22.
Result: A total of 114 patients were included in this study, with 66(57.9%) males. Mean age of presentation was 45.25±15.32 years. Squamous cell carcinoma was encountered in 75 patients (65.8%). The most common location of tumor was lower thoracic esophagus (LTE) seen in 66 patients (57.9%) Ivor Lewis esophagectomy (2 stage) was performed in 69(60.5%) patients, whereas McKeown (three stage) was conducted in 45(39.5%). Tumor free margins were seen in 111(97.4%). Longer duration (5hrs) of surgery was 62.7% found in McKeown esophagectomy. Total 30-day mortality was 7.9% (9/114), with respiratory failure as the most common cause. Overall mortality was 7% (8/114), predominant in two stage esophagectomy. However, major complications such as anastomotic leak 5.26% (6/114) and early stenosis 29.8% (34/114) were noted in Three stage surgery.
Conclusion: Despite smaller duration of surgery, technical feasibility and low morbidity, two staged esophagectomy bears comparable mortality as compared to the three staged esophagectomy. However, both procedures are relatively safe and effective provided accurate indications, patient selection and technical expertise.

Keywords: Anastomotic leak, esophageal carcinoma, ivor lewis esophagectomy, McKeown esophagectomy, squamous cell, stricture

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INTRODUCTION

Esophageal carcinoma (EC), previously the eight most common cancer, has escalated to become the seventh most frequently encountered tumor worldwide. Squamous cell carcinoma of esophagus (SCCE) and adenocarcinoma of esophagus (ACE) are the prominent subtypes[1-5]. Rare malignant variant includes leiomyosarcoma which can be encountered in 0.1-0.5% of patients[6,7]. Majority of EC are reported to affect people during the 5th to 7th decade of their lives[3,7]. Males have two to four folds chances of developing EC with the ratio further worsening with histological subtypes[3].

SCCE remains the most common subtype that predominates Asian and developing countries[1,5]. ACE, on the other hand, is seen more in USA and European countries. The histological subtypes are seen to affect particular segments of the esophagus[1,3,5]. SCCE has propensity to develop in the proximal and middle thoracic esophagus , whereas ACE is found in the distal esophagus[1,3,5]. Risk factors play a vital role in the development of EC. Smoking , alcohol, hot beverages, betel nuts, diet deficient in vitamins and poor social status are known factors for SCCE[1,2,5]. On the contrary, gastroesophageal reflux disease (GERD), obesity and

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smoking are established risk factors for ACE[1,3,5]. Principal complaint remains progressive dysphagia followed by weight loss and regurgitation[3]. Other symptoms include chest pain that may be dull or burning in nature, odynophagia and chronic cough[3].

Literature states that pathological staging corresponds to the clinical staging in more than one fourth of the cases, which undeniably validates the role of pre-operative staging[2]. Endoscopic ultrasound (EUS), Computed tomography (CT) and Positron emission tomography (PET) are the widely used radiological investigations after endoscopic biopsy has been performed[2,3,5]. EUS holds importance in identifying the presence of regional nodes (N) along with tumor size and extent also referred as 'T'. It aids in differentiating T1-3 and permits needle aspiration of nodes. CT scan despite being able to identify esophageal wall thickness = 3mm is useful to identify stage T3 and T4 only. However, it is of prime importance for the nodal and metastic (M) staging[2,3,5]. Addition of PET scan to the CT, assists in the diagnosis of N and M but it fails to differentiate among the four T stages[2,8]. Few authors advocate that PET-CT avoids the need for unwanted and other relevant investigations if metastasis is evident[2].

Management options for patients with EC include endoscopic mucosal resection (EMR), esophagectomy with or without neoadjuvant therapy, chemoradiotherapy (CRT) or the other palliative management[1,3,4] based upon the stage of the disease. The limited diseases can be approached by EMR or esophagectomy alone whereas locally advanced diseases benefit from neoadjuvant therapy prior to the resection[1,3,4]. Esophagectomy with lymphadenectomy remains the most important modality, following neoadjuvant therapy resulting in the improvement of overall survival (OS). Pre-operative CRT or chemotherapy (cT) alone indeed have benefits including decreased positive nodes, better pathological response rate and downstaging of tumors permitting surgical maneuvers without any significant effect on the post-operative complications[1,4].

Well known procedures include Ivor Lewis Esophagectomy (ILE), McKeown Esophagectomy (ME) and transhiatal esophagectomy. Procedures can be performed via open or minimally invasive approaches with preference to the transthoracic route due to its ability to allow better lymph node dissection. Both types of surgeries have similar margin and lymph node clearance[9].

Despite the global advances in the management and surgical expertise, EC unfortunately continues to be the sixth most common cause of cancer related death[1-4]. Studies report a five-year survival rate(SR) of up to 20% with an alarming lower survival rate of less than 10% in Pakistan, China and Iran[1,3,5]. Not much work defines the early outcome in local literature strengthening the perspective of this study to review variables, neoadjuvant therapies, complications and early outcome in terms of the two most commonly performed surgeries.

METHODOLOGY

IRB/ERC Approval:

A retrospective cross-sectional study was conducted in the Department of Thoracic surgery, Jinnah Postgraduate Medical Centre Karachi from year 2019-2021 after ethical approval was obtained holding letter No. F.2-81/2022-GENL/162/JPMC.

All patients presenting with esophageal carcinoma that underwent esophagectomy were included in this study. Two types of surgeries were performed, termed as Two staged and three stage esophagectomy. Two stage esophagectomy also called ILE includes two components. First stage includes a midline laparotomy for mobilizing stomach, with preservation of right gastroepiploic artery, kockers maneuver, hiatal enlargement, ligation of short gastric vessels, gastric artery, pyloroplasty and feeding jejenostomy[10]. Second stage comprises of right posterolateral thoracotomy with mediastinal pleura dissection, esophagus mobilization, ligation of azygous vein, delivery of stomach in chest followed with conduit creation using GIA® linear staplers and removal of tumor segment. End to side esophagogastric anastomosis was performed above the level of azygous vein with the circular GIA® staplers[10].

Three staged esophagectomy also called ME had similar abdominal component with simultaneous esophagus mobilization in the neck via left oblique incision along the anterior border of sternocleidomastoid. The esophagus was slinged and wound was temporarily closed. The thoracic component was performed similar to ILE with the difference that conduit was created in the chest with closure of stomach and anchor suture were applied on the proximal esophagus to aid in pulling of the conduit into the neck[11]. Third stage was completed with end to side esophagogastric anastomosis via hand sewn technique. Regional node dissection was performed in both the procedures[10,11]. Drains included Nasogastric (NG) tube, chest tube and abdominal drains which were removed as per indication.

Data was retrieved from a pre-formed data sheet which included variables such as age, gender, BMI, risk factors, site of tumor, histological type, segment length, clinical staging, type of surgery, duration, volume of blood loss, complications, mortality, pathological

staging, neoadjuvant therapy, adjuvant chemotherapy or adjuvant chemoradiotherapy etc.

For Data analysis, SPSS version 22 was used. For descriptive data such as age, BMI, volume loss, duration of surgery etc. mean and standard deviation were calculated. For categorical variables such as gender, histological type, type of esophagectomy, neoadjuvant therapy and other frequencies and percentages were calculated. Independent sample T test was use for comparison of means. Chi square was applied for categorical variables and p value=0.05 was considered statistically significant.

RESULTS

A total of 114 patients were included in this study which included 66(57.9%) males and 48(42.1%) females. The mean age of presentation was 45.25±15.32 years (median 45.5) with BMI and weight of 22.15±2.92 Kg/m2, 51.93±8.52kg respectively. Around 23(20.1%) patients were less than 30 years of age. Common risk factors included smoking in 45 (39.1%), GERD in 32(27.8%), poor dietary habits in 25(21.7%) and alcohol consumption in 9(7.8%). Three variants of esophageal tumor were seen with squamous cell being the most common encountered in 75(65.8%). The most common location of tumor was lower thoracic esophagus (LTE) seen in 66(57.9%) patients and stomach/cardia was involved in 41(36%). Table 1 represents type of tumor and location.

In 75 patients with SCCE, most common location was middle thoracic esophagus (MTE) seen in 45(60%;p<0.001). However, in38 adenocarcinoma patients LTE was involved in 37(97.3%;p<0.001),with tumor invading cardia in 29(76.13%;p<0.001) patients. In 38 cases of adenocarcinoma, 28(73%;p<0.001) were males, whereas in SCC males and females were equally affected (n=37:49.3% and 38;50.6% respectively). Out of 32 patients having GERD, 27(84.35%;p<0.001) developed ACE, smoking was seen in both, however it was predominant in squamous cell carcinoma (37/45,p=0.003). Patients with poor dietary habits developed SCCE(21/25,p=0.03).

Pre-operatively, on basis of CT scan, the mean tumor length was 5.45±1.46 cm and to AJCC clinical staging II was most common stage seen in 53(46.5%) patients. Table 2 represent stratification according to AJCC clinical staging.

Neoadjuvant therapy was given in 101(91.8%) patients. Stage III and IVA required neoadjuvant therapy (47/51;p=0.02 and 10/10;p=0.29 respectively). In 63 patients out 75(84%; p=0.08) of SCCE, neoadjuvant was given. All patients of ACE , received neoadjuvant as part of perioperative chemotherapy.

ILE (2 stage) was performed in 69(60.5%) patients, whereas ME (three stage) was conducted in 45(39.5%). Tumor free margins were seen in 111(97.4%). Clear margins proximally were 3.5±1.19cm and distally 5.07±1.22 cm. The mean volume of blood loss was 780.2±264.53 ml and duration of surgery was 4.81±0.83 hours. Nasogastric tube was removed on 6.76±1.33 days.

Total number of nodes removed were 20.77±3.90(8-30) with mean positive 3.94±3.16(0-18). Most common pathological staging post operatively were pT2N1M0, pT3N2M0 (n= 23; 20.2% each) followed by pT2N2M0 (n=20;17.5%) and pT3N1M0(n16;14%). Other incidental findings included splenectomy 5(4.4%) and carcinoid tumor in 2(1.75%).

Mortality within 30 days was seen in 9(7.9%) due to respiratory failure(RF) in 6(5.3%) and acute myocardial infarction(AMI) secondary to arrhythmias in 3(2.6%). Both AMI and RF were common in ILE (n=2/3; 4/6 respectively). The mean and median age among mortality group was 66.5±4.56 and 65.5 years respectively. Complications included stenosis in 39(34.2%) out of which 32(82.05%; p<0.001) required dilation. Hoarseness in 11(9.64%) and anastomotic leak (AL) encountered in 7(6.1%) patients, which was managed conservatively. Five (71.4%; p=0.03) of AL later on developed stenosis.

Adjuvant therapy was given in 75(65.7%) where chemotherapy alone was given in 38(50.6%) and chemoradiotherapy (CRT) in 37(49.3%) patients. Node positive patients required both chemotherapy and CRT (p=0.01,p=0.007 respectively). Table 3 compares the various factors and outcomes of two stage vs three stage esophagectomies.

Table 1: Histological type and location of tumor

A	**Histological type**	**Number(%)**
1	Squamous cell carcinoma	75(65.8%)
2	Adenocarcinoma	38(33.3%)
3	Leiomyosarcoma	1(0.9%)
B	**Location of tumor**	**Location of tumor**
1	Lower thoracic esophagus	66(57.9%)
2	Middle thoracic esophagus	47(41.2%)
3	Upper thoracic esophagus	1(0.9%)

Table 2: Stratification according to AJCC clinical staging

AJCC clinical staging	**Number(%)**
II	53(46.5%)
III	51(44.7%)
IVA	10(8.8%)

Table 3: Compares the various factors and outcomes of two stage vs three stage esophagectomies

	Variable	Two stage		Three stage		p-value
		Number	%	Number	%	
A	**Histological type**					
1	Adenocarcinoma	29/38	76.3	9/38	23.6	<0.001*
2	Squamous cell carcinoma	40/75	53.3	35/75	46.6	<0.001*
3	Leiomyosarcoma	-	-	1/1	100	<0.001*
B	**Duration of surgery**					
1	< 5 hours	50/63	79.3	13/63	20.6	<0.001*
2	= 5 hours	19/51	37.2	32/51	62.7	<0.001*
C	**Stage**					
1	Clinical stage	II=31/53	58.4	III= 26/51	50.9	0.05*
2	Advanced stage	17/35	48.5	18/35	51.4	0.08
3	pT2N1M0	20/26	76.9	6/26	23.07	0.05*
4	pT3N1M0	4/16	25	12/16	75	0.002*
5	Positive margins	3/3	100	0	-	0.15
D	**Morbidity and Mortality**					
1	Expired in 30 days	8/9	88.8	1/9	11.1	0.07
2	Hoarseness	2/11	18.18	9/11	81.8	0.03*
3	Leak	1/7	14.2	6/7	85.71	0.01*
4	Stenosis	5/39	12.8	34/39	87.17	0.001*

NG= Nasogastric tube, p=pathological, *=significant p values

DISCUSSION

Esophageal carcinoma continues to remain among the ten most common cancers affecting human beings[1,4,5,11]. Around 17'000 to 570,000 cases per year are being reported across different regions of the world[1,2]. Incidence rate in Iran, China and Africa is 50 to 100 cases per 100,000 each year, whereas a lower rate of 5 to 10 cases is encountered in Western nations[12]. A recent ten-year retrospective study in Karachi, Pakistan reported 1009 new cases diagnosed with EC[3]. We report here 114 cases that underwent surgery during the course of our study.

In our study, more than half were males which are consistent with the literature[5,12,13]. Furthermore, studies suggest that males are at two-fold risk for SCCE compared to females. However, our study had an equal ratio. The risk for males in ACE ranges up to 1.7 to 8 times[2,5,12-14]. We report 2/3rd of the ACE patients as males. EC commonly tends to affect people at fifty years or above. We encountered mean age group of 45.25±15.32 years[3,7]. Dawsey et al, reported 1-6% of patients being less than 30 years of age which was alarmingly high at 20.1% in our study[12]. Hence, it is not only the disease of the elderly but it can affect young as well.

We saw SCCE as the most common subtype with majority located in MTE (n=45,p<0.001) followed by LTE(28;37.3%). Previous studies stated middle followed by proximal esophagus as sites for SCCE whereas a recent study in USA correlated to our study[13]. Smoking and poor dietary habits promote malignant squamous cell formation and we saw a similar pattern (p=0.003 and p=0.03 respectively). ACE continues to be found in LTE similar to our study (p<0.001). GERD, an established risk factors for ACE, was significant in our cases as well (p<0.001)[1,3,5,14,15]. Studies previously have supported MTE as a commonest location for EC, contrary to our study that reports LTE in 57.9%[13]. A recent study conducted in USA reported LTE as most common location with ACE being predominant histological type[14]. In our study 56% (n=37) of LTE were ACE whereas remaining were SCCE.

Leiomyosarcoma a rare smooth muscle tumor of esophagus affects patient after fourth decade of their life. It develops in MTE and LTE with a slow growth rate. Wide resection with lymph node resection remains the main modality[6,7]. Adjuvant radiotherapy may locally control the disease. Only 165 cases have been reported till date and we came across a single case with similar findings as mentioned[6].

Transthoracic resection of esophagus with lymph node clearance remains the procedure of choice[9,16-18]. Lymph node dissection holds a pivotal importance in the overall survival[18]. Two field nodal resection is adequate for nodal clearance. In our study a mean of 20.77±3.90 nodes were removed which is comparable to the literature[19].

Transthoracic approaches include ME and ILE. ME is associated with higher morbidity but low mortality as compared to ILE. Morbidities include AL, hoarseness, stenosis, longer duration of surgery, blood loss[9,20]. In our study hoarseness, AL and stenosis were predominantly seen in ME (p=0.03;0.01;<0.001 respectively). In ME group 13.3% (n=6/45) suffered AL similar to literature[20]. For ILE, leak rates range from 4-15%, we found a lower rate of 1.4%(n=1/69). As per our study, 85% of the overall AL belonged to ME[21]. Hoarseness is attributed to RLN injury due to the cervical esophagus mobilization. We saw 81.8% of the total hoarseness in ME vs ILE.

The duration of surgery seen in ME is prolonged,[9,19,22] owing to an additional step of the neck dissection. Operative mortality within 30 days' ranges from 0 to 4.5%[16,19,23], which was found to be 7.9%(n=9/114) in our study. Pulmonary complication and AMI remained the prominent factors in our study. Pulmonary complications leading to death developed in 5.26 % in our study and were more prevalent in ILE than ME. Andrew M et al, stated pulmonary complications of 12%, 18% in ME and ILE respectively[19,20]. We saw 2/3rd of the pulmonary complications leading to mortality in ILE. A meta-analysis by Theochari et al, showed 1.9% of patients developing AMI after esophagectomy[24]. We found 2.6%(n=3/114) patients suffering a fatal myocardial infarction mainly in ILE.

Neoadjuvant approach should be considered as a standard treatment of patients with locally advanced and operable EC. Preoperative CRT significantly increases the pathologic complete response (pCR) rate, ranging from 18% to 43% which is an independent favorable prognostic factor for survival and for locoregional and systemic recurrences[4]. In our study, of the total 101 patients who received neoadjuvant therapy, highest number of the recipients belonged to the stage III i.e. 46.5%. As reported by a Watanabe M, neoadjuvant chemotherapy is currently a standard treatment for Stage II/III SCC in Japan[25]. Similarly, 86.6% of our patients having SCC were given the neoadjuvant treatment before surgery.

CONCLUSION

It was a retrospective high output center study conducted to compare the attributable factors affecting two and three staged esophagectomies in terms of morbidity and mortality. All patients included, were managed as a multimodality approach based upon the type and stage of the disease. The standard practice consisted of clinical staging followed by suitable neoadjuvant therapy and further surgical resection. The variables contributing to the outcomes in terms of respective complications and later death within thirty days were studied. Three staged esophagectomy thus found to be safer for better clearance margins and negligible deaths. On the other hand, two stage esophagectomy without possessing significant risks of stenosis, hoarseness and anastomotic leak, was associated with early mortality mainly due to cardiac and respiratory failure. However, much work still needs to be done locally to enhance timely surgical referrals and incorporate effective screening methods providing optimum chances of survival to the patients.

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ORIGINAL ARTICLE

Effectiveness of Diode Laser Powered Adenoid Gland Ablation in patients with Adenoid Hyperplasia

Beenish Nisar Ahmed[1], and Muhammad Yasir Khan[2]

ABSTRACT

Objective: To evaluate the surgical efficacy of diode laser ablation of adenoid gland hyperplasia in terms of improvement in surgical technique, clinical symptoms and quality of life.
Methodology: In this study, we found out the results of diode laser ablation in the adult population who present with adenoid hyperplasia with grade 2 enlargement from the grading system of Parikh et al., Diode laser ablation was done under general anesthesia. Patients with grade 2 hypertrophy were diagnosed with endoscope and after informed consent laser ablation was done under general anesthesia .Postoperatively patients were followed ,examined and pro forma were filled.
Results: Results were analyzed on preoperative and postoperative endoscopic findings, improvement in symptoms of nasal obstruction, intraoperative blood loss, duration of surgery and postoperative complications. Results showed that diode laser effectively ablated adenoid tissues with less complications better surgical technique and improving symptoms and quality of life. Please mentions specif resuts in stats
Conclusion: It was observed that endoscopic laser ablation was better in terms of minimal blood loss, can be performed in less surgical time, and improves obstructive symptoms. There was no significant postoperative complication.

Keywords: Adenoid hyperplasia, diode laser ablation, endoscopic grading system, OSA obstructive sleep apnoea

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INTRODUCTION

Adenoid is a cluster of lymphatic tissue located at the rear of the nasal cavity or posterior superior wall of nasal passage. In 1724, Santorini identified the nasopharyngeal lymphoid mass, which he called ‘Lushka’s tonsil.’ Later, in 1870, Wilhelm introduced the term 'adenoid' to refer to what he described as ‘nasopharyngeal growths. Enlarged adenoids are often found in children. The adenoids may have swollen as a result of infections or allergies.

Adenoid hyperplasia is diagnosed on nasal endoscopy. When they increase in size, they can lead to noisy breathing and issues with airflow. Adenoids are a component of the immune system. These organs provide immunity against contamination. The adenoids expand until a child becomes six years old, at that point, they progressively reduce in size. In many adults it persists and presents with symptoms of obstructive sleep apnea and nasal obstruction.[1]

Typically, the adenoids become enlarged with recurrent infections and persist in their swollen state. Allergies can also cause this enlargement. Usually in adults, adenoids can become swollen due to ongoing infections, allergies, or environmental pollutants, smoking, or tumour[2]. The signs of swollen adenoids may involve raucous breathing during sleep and episodes of obstructed breathing while sleeping, strained or rattling breath, restless sleep, bad breath or dry oral mucosa, difficulty in swallowing, runny nose, ear infections, cervical lymphadenopathy, etc[2].

In certain individuals, swollen adenoids do not need intervention and a wait and watch policy is adopted. The most appropriate treatment is determined by the individual's age and size of pharyngeal tonsils. Corticosteroid nasal aerosol and antibiotics could

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potentially reduce the volume. Immune boosting measures and good hygiene can help prevent infections. Treatment depends on how severe the condition is[3]. However, it is common to be removed if they continue to cause problems despite medical management. One study by Manas Ranjhan et al indicates that 21% of nasal blockage in adults is due to hypertrophied adenoid. However, in patients with chronic tonsillitis, only 9% were linked to pharyngeal tonsil enlargement. Males are more frequently affected (70%) compared to females, possibly due to outdoor behaviors and more frequently exposed to environmental pollutants. The most commonly affected age group is 16–25 years (60%). Most cases of pharyngeal tonsil enlargement are linked to infections and allergies, including descending infections in 33.3% of cases, ascending infections in 20%, and allergic rhinitis in 30%.Sino nasal tumors, nonHodgkin's Lymphoma and HIV infections are occurring in 3.3% of cases. Therefore, adult pharyngeal tonsil enlargement should be addressed effectively and with utmost seriousness[4]. The occurrence of lymphoid tissue overgrowth in the adult nasopharynx, including the continuation of childhood pharyngeal tonsils, is linked to chronic inflammation. Interestingly, shrunken adenoidal tissue might begin to grow again due to infections and irritants. Hyperplasia can be due to compromised immunity[5]. Swollen pharyngeal tonsils can expand to almost the size of a ping pong ball, potentially obstructing airflow completely through posterior nasal airways. Pharyngeal tonsils can also block the nasal passages sufficiently to impact the sound of the voice[5].

In a few studies, adult patients with expanded pharyngeal tonsil tissue in the nasopharyngeal region were observed[4-6]. Different symptoms were reviewed. Imaging techniques such as CT, MRI, and positron emission tomography (PET) reveal that adenoid size significantly diminishes with age[6]. While adenoid tissue typically reduces during adolescence, adenoid enlargement can still occur in the general adult population. In this advanced era of medicine and with the invention of endoscopes, now it is possible to find enlarged adenoids without further investigations[7]. Finkelstein et al. observed that 30% of heavy smokers had obstructive adenoids, though another study found that the prevalence in smokers was not notably greater compared to males of the same age group. In Hamdan et al.'s study, the incidence of adenoid enlargement in adults with nasal obstruction was about 63.6%, as compared to 55.1% in the control group ($p = 0.007$). Research carried out by Yaldrim et al. in 2008 demonstrated etiology and the pathological features of adenoid enlargement in both adults and children[8]. Clinical and structural characteristics, along with associated ENT conditions, were documented in 40 adults and 23 children undergoing adenoidectomy due to obstructive adenoid enlargement.[9] Adult adenoid enlargement was linked to nasal septum deviation in 25% of cases. Adult pharyngeal tonsils exhibited persistent inflammatory cell infiltration and subsequent alterations, such as squamous metaplasia. Adenoid enlargement may serve as an indicator of HIV infection.[8]

In our study, we included adults with adenoid hypertrophy. We used endoscopic classification of adenoid gland hyperplasia by Parekh et al., 2006 which describes the grading system in grade 1-4. Grade one adenoid tissue not in contact with neighboring structures is classified as Grade 1, while Grade 2 refers to adenoid tissue that is in contact with Taurus tuberous, Grade 3 indicates adenoid tissue in contact with the vomer, while Grade 4 denotes adenoid tissue in contact with the soft palate at rest[8-10]. In our study, we included only patients with Grade 2 enlargement and we did regular endoscopic examinations of patients.

The methods of surgical removal of adenoids include conventional curettage method, coblation method and micro debrider method with endoscope. Endoscopic LASER, specifically, diode laser can be utilized for the removal of adenoids. Diode LASER are compact solid state devices that generate coherent light. They are designed to emit light across a wide range of wavelength from 980-1470. With the advancement of LASER techniques, we utilize diode laser ablation to remove adenoid tissues.

This article will describe how diode LASER can be used to ablate enlarged adenoids in adults and the benefits of using the LASER technique.

METHODOLOGY

IRB/ERC Approval:

This 2-year retrospective longitudinal study, was conducted at KRL Hospital Islamabad—a 300-bed tertiary care facility. Ethical approval was taken with reference ERC: KRL-HI-PUB-ERC/24/07.

Thirty adult patients over the age of 16 with adenoid enlargement classified as Grade 2 were examined. The study was carried out in the Department of Otolaryngology and Head & Neck Surgery from February 2019 to January 2022. Participants were selected based on the inclusion criteria of having Grade 2 adenoid enlargement confirmed by nasal endoscopy, without comorbidities, and provided authorization for participation. They were required to consent to all

necessary examinations and attend follow-up appointments. The study aimed to assess this specific patient group, with no prior comparative research available.

Individuals were excluded if they were under 16 years old, had comorbidities such as diabetes, hypertension, HIV, HBV, or HCV, had severely enlarged adenoids (Grade 3 or 4), did not consent to research participation, missed follow-up appointments, were pregnant or breastfeeding, or had other nasal diseases such as deviated nasal septum, polyps, or nasal growths. Initially, the individuals visiting the ENT outpatient clinic having enlarged adenoids were recruited and diagnosis was confirmed with nasal endoscopy. They were informed about diode laser technique and written consent was taken from them. Their preoperative symptoms and signs were recorded using the pro forma and their preoperative endoscopic findings were confirmed for enlarged adenoids occupying the posterior choana, also their grading was confirmed. Detailed history including duration of illness to complete symptoms was taken. A detailed history was obtained from these individuals concerning additional symptoms such as unilateral or bilateral nasal obstruction, sneezing, runny nose, nasal itching, headache, fever, anosmia, cough, and so forth. Significant medical history, occupation, and family history were also taken into consideration. Zero-degree nasal endoscopy was done to confirm the degree of obstruction. Adenoid enlargement was accessed with a grading system. Classification 1: adenoid tissue not touching neighboring structure; Classification 2: adenoid tissue touching Taurus tuberous; Classification 3: adenoids adjacent to the vomer; Classification 4: adenoids touching the soft palate.

It was useful to exclude patients with other diseases like nasal septum deviation, septal spur, nasal tumor, foreign object, nasal stone, and so forth. Once patient inclusion criteria were finalized we planned a patient for endoscopic surgical diode laser ablation under general anesthesia. A proper and standardized routine preoperative anesthesia assessment was done. Then post-operative patients were re-accessed by filling pro forma and recording the findings in terms of symptomatic relief, improvement in quality of life (well-being questionnaire 18 for obstructive sleep disorder), and post-operative endoscopic findings. Surgical duration was measured to be less than 20 minutes in laser assisted and bleeding was also less than 50 ml. Usually bleeding is 50 ml in adenoid with cold curettage system and time duration is more than 20 minutes. We followed the patients after one week, three weeks, six weeks and 1-year post surgery. Results were analyzed and incidence (frequency) of each result was calculated .

RESULTS

In this study we evaluated the effectiveness of diode laser ablation of adenoid tissue in terms of improvement in symptoms, shorter surgery duration, lesser blood loss than usually seen with cold curettage, and improvement in adult patient's quality of life. Among 30 patients, 24 were men and 6 were women. All patients had improvement in symptoms. Interestingly, those patients who had palatal issues, neck cervical issues, Eustachian tube dysfunctions, benefited more from this technique. Patients with cervical issues underwent the procedure without exerting the neck. Patients with palatal and Eustachian tube dysfunctions were benefited due to precise endoscopic ablation. Twenty-seven patients showed endoscopic improvement on follow ups. Three patients showed recurrence of tissue on endoscopy after one year of follow up. Over all surgical time was shorter in diode laser use as compared to average conventional system cold curettage which was average 20 minutes or more according to all published literature, but in diode laser it was reduced to between 5 and 15 minutes. Bleeding was also minimal as our study showed average 15-25 ml of blood loss as compared to cold methods that show 50 ml of blood loss on average.

Table 1: Age and Gender Distribution of Individuals with Adenoid Enlargement (n = 30)

ID	Age Bracket	Men	Women
1	16-25	12	3
2	26-35	6	2
3	36-45	6	1
	Total	24	6
	Percentage	80%	20 %

Table 2: Improvement in Symptoms of Patients in Adenoid Hypertrophy n =30

Symptoms n=30	Improve	No Improvement	% of Improvement
Nasal obstruction	30	0	100
Obstructive sleep apnea	24	6	80
Mouth breathing	23	7	76.6
Voice change	24	6	80
Nasal discharge filled nose	30	0	100
snoring	28	2	93.3

Table 3: Duration of Surgery in Patients of Adenoid Hypertrophy n =30

Time Duration	10-15 min	15-20 min
No of Patients n =30	n=21	n=9
Total	21	9
Percentage	70%	30%

Table 4: Blood Loss in Patient of Adenoid Hypertrophy n =30

Blood loss in cc	10-15 cc	15-20 cc	20-25 cc
No of pt. n =30	7	13	10
Percentage %	23.3%	43.3%	33.3%

Table 5: Endoscopic Grading Improvement (Endoscopic Grading by Parikh et al.)

Pre-operative Grading	n=30	
Post-operative Grading	Remained the same n=4	Grading improved no enlargement of adenoids identified n=26
Percentage	13.3%	86.6%

Pro Forma: Follow up was taken with a pro forma filled on the first week, three weeks, 6 weeks, and one year following the operation.

Name	
Serial no	
Age	
Diagnosis	
Surgical procedure	
QOL questionnaire 18 OSA	Filled yes …. No…….
Intraoperative blood loss in	
Ml	
Duration of surgery in minute	
Post-operative complications	
Improvement in symptoms	
Preoperative endoscopic findings	
Post-operative endoscopic findings	

Quality of life in patients improved as assessed by quality of life questionnaire for OSA 18 on follow up.

DISCUSSION

Adenoids are lymphoid tissues which are present at the posterior superior wall of nasopharynx. Hypertrophy of adenoids is also known as enlarged adenoids[1-5]. Hypertrophy can lead to hearing impairment, recurrent ear infections, rhinorrhea with discharge that can be mucopurulent, airway obstruction, and malposition of teeth.[1-6]

Adenoids were first given the name by Santorini as 'Lushka's tonsil' in 1724. Wilhelm described them as 'nasopharyngeal vegetation' in 1870. They are a part of the immune system in the human body.[2] Adenoid hypertrophy is common in children. They may have enlarged due to infections or allergies. Initially, it was diagnosed on x-ray lateral view nasopharynx but now with the advancements in endoscopic examination, adenoid hyperplasia is diagnosed on nasal endoscopy[3].

With the hypertrophy of adenoids, patients may have many clinical symptoms that can be extremely disturbing. It includes recurrent nose and sinus infections, acute otitis media, hearing difficulty, and most important of all, airway obstruction[3]. It can lead to facial cosmetic problems due to the malposition of teeth. Airway problems present with snoring, mouth breathing, dry mouth etc. Usually by the age of 6 years, adenoids shrink in size and resolve the symptoms on their own[4]. If they persist, they can lead to sleep apnea and nasal obstruction[5].

Permanent hypertrophy is the result of recurrent infection. Allergies can increase the intensity of symptoms. The majority of adult patients do not require treatment as their symptoms are not extremely disturbing or their allergies and infections settle down and patients become symptom free[6] However, many of the patients present with severe symptoms. Treatment depends upon the age of the patient, size of enlarged adenoid, intensity, and duration of symptoms. Medical treatment includes steroid sprays, anti-allergies and antibiotics. Good hygiene, immune boosting, and nasal irrigation also help in many of the patients[7].

However, if the symptoms persist or the size of the adenoids is obstructing the airway, surgical options are utilized[7]. Traditionally, adenoids can be removed with curettage method. With the advancement of science, we have other options like the utilization of laser in selective cases. Adult adenoids should be treated seriously and effectively as studies show they may have tumors in them[8,9].

Enlarged adenoids were confirmed with x-ray nasopharynx in the past but now with the endoscopic examination, it is easily diagnosed in the same clinical OPD setting.

Enlargement is assessed with a grading system. Few grading systems are used for identification. One generally used grading system by Clemens and Mcmurray includes obstruction of back of the nose by adenoids from 25%, 25-50%, 50-75%, and to 100 % based on percentage of posterior choana that is blocked by adenoid tissues.[7-10] Another grading system is the ACE grading system. A for Airway represents grade ranging from 0 to 4 based upon volume of the adenoid, relative to the size of the nasopharyngeal airway; C for choana ranging from 0-2, depending upon the relationship between adenoid to the vomer; and E for Eustachian tube ranging from 0-1 based upon whether the Eustachian tube opening was blocked.[8-10]

One of the most valid subjective classification is by the Parikh method, which includes Classifications 1 to 4 . Classification 1 includes adenoid tissue not in

contact with neighboring structure; Classification 2: pharyngeal tonsils touching Taurus tuberous; Classification 3: adenoids touching the vomer; and Classification 4: adenoids touching the soft palate.[7-10]

Multiple studies have been published so far for adenoid hyperplasia and the prognosis in adults Manas Ranjhan et al indicates that 21% of nasal blockage in adults is due to adenoid enlargement[4]. However, in patients with chronic tonsillitis, only 9% were linked to adenoid enlargement. Males are more frequently affected (70%) compared to females, possibly due to outdoor engagements in activities and increased exposure to pollutants. The most frequently affected age group is 16–25 years (60 %). Association of malignant sino nasal tumors, nonHodgkin's lymphoma and HIV infections are infrequent at 3.3 % each. Finkelstein et al found that 30% of heavy smokers had obstructive adenoids, while another study showed that the proportion of smokers was not notably greater compared to males of the same age group[8] Research by Yaldrim et al in 2008 revealed the causes and pathological features of hypertrophied adenoids in both adults and children[9]. Clinical and structural characteristics, along with related conditions, were documented in 40 adults and 23 children. Mayra Soares Ferreira et al in 2018 did a comparison study between conventional curettage, micro debrider, and coblation methods for removal of adenoids and in that, conventional technique was found to be better than all others[10-12]. Diode laser was used for tonsillectomy in many researches and the results were optimal. We utilized this technique for the removal of adenoids with endoscopic approach.

When patient inclusion criteria were finalized, we planned endoscopic surgical diode laser ablation under general anesthesia, then post-operative patients were reassessed by filling pro forma.

CONCLUSION

This article describes how diode LASER can be used to ablate enlarged adenoids and benefits of using the LASER technique. The results are interesting as improvement in obstructive symptoms, less bleeding during surgery, decreased surgical time are seen in patients with diode LASER adenoidectomy. Although we had limitations that only mild to moderately enlarged adenoids can be treated in this way, but in future, we can utilize this technique for advance grading also. This technique will open the utilization of diode LASER further in the field of ENT surgery. In the past, multiple studies have been published for removing tonsils with LASER, but for adenoids this is a parent research with no previous research published till now in preforming adenoidectomy with diode LASER.

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ORIGINAL ARTICLE

Socioeconomic and Training Influences on Medical Students' Psychiatry Career Choices

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ABSTRACT

Objective: This study investigates the impact of socioeconomic status and training factors on medical students' preference for psychiatry as a career.
Methodology: Conducted at a tertiary care hospital, the cross-sectional study targeted final and fourth-year undergraduate medical students. Exclusions comprised students without psychiatry ward exposure, or attendance at non-specified universities. Data collection involved a self-structured questionnaire distributed both online and manually, preceded by a pilot study for questionnaire standardization. Independent variables included age, gender, medical college, and study year, with dependent variables focusing on career preferences and psychiatry-related knowledge.
Results: Psychiatry ranked as the third most chosen specialty. Demographic analysis revealed that there was no significance of gender in students' interest in psychiatry, with a nearly equal ratio of male and female participants. Among age groups, 23-year-olds showed the highest preference for psychiatry. Factors significantly influencing psychiatry choice included satisfaction level ($p<0.001$), exposure to mental illness($p=0.013$), clinical exposure through ward rotations ($p=0.026$), and lectures ($p=0.012$).
Conclusion: The study highlights a positive attitude towards psychiatry, ranking it third among career choices. Notable associations were found between interest in psychiatry and exposure to mental illness, as well as clinical and educational experiences. These findings underscore the importance of addressing socioeconomic and training factors in shaping medical students' career preferences in psychiatry.

Kewwords: Clinical exposure, medical students, mental illness exposure, psychiatry career choices, socioeconomic influences, training factors

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INTRODUCTION

Mental health is as vital as physical health and creates emotional, psychological, and social well-being. The mental health of a person defines how they feel and react in different situations.[1,2] A psychiatrist is a medical doctor who focuses on diagnosis, treatment, and prevention of emotional and mental disorders. In several low-and middle-income countries, negative attitudes towards mental health issues are common, resulting in a preference for traditional healers over psychiatrists because of their cultural and societal acceptance. Another issue is the stigmatizing perception by other health professionals who degrade psychiatry and follow medical specialties typically perceived as glamourous[3-5]. Medical educators have identified the economic factors that contribute to the enlistment choices, such as students being attracted to high-paying specialties to repay student loans and living a luxurious life without any societal pressure[6].

During a period of four years, the percentage of medical school seniors in the US choosing psychiatry rose from 3.9% in the 2012 match to 5.0% in the 2016 match[7]. Although psychiatry accounts for 5% of residency slots

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nationally, since 2011 only 50%-62% of these slots have been filled by graduates of allopathic U.S. medical schools[8]. The number of psychiatrists employed in the United Kingdom increased over the period observed from approximately 8.2 thousand in 2000 to 12.3 thousand in 2019[9]. In 2004, the total number of licensed psychiatrists in China was 16,103 (1.24 psychiatrists per 100,000 people), which is significantly lower than the global average of 4.15 psychiatrists per 100,000 people[10]. According to the WHO in Pakistan, only 400 psychiatrists and 5 psychiatric hospitals exist within the entire country for a population exceeding 180 million[11].

The positive factors which attracted students towards psychiatry as a career were the possibility of making a difference in patients' lives, job contentment and the comprehensive approach to psychiatry and lifestyle variables[3,12]. A family member or any close one having mental illness also draws people towards a better understanding of this field[13,14]. The factors involved in the aversion from psychiatry as a career choice include lack of awareness or interest[5], perception that psychiatry is professionally less rewarding compared to other specialties, and fear of dealing with violent patients[3]. Short clerkship duration is also one of contributing factors to the decline in choosing psychiatry as a field[15].

In Pakistan, families play a key role in students' career decisions, hence, an element of 'family aversion,' was also found[16,17]. Psychiatry has been stigmatized and misunderstood by the public for a long time now. Multiple studies suggest that medical students' perspectives of psychiatry improve after their undergraduate experience in this field[18,19]. Clerkships and opportunities to engage with patients enhance knowledge of psychiatry and cultivate the capacity to converse with individuals with mental illness, optimize mindsets toward psychiatry and mental illness[20-22].

Availability and quality of postgraduate training in Pakistan could also have an impact on medical students' decisions. Psychiatry training is currently provided by 17 institutes, with 100 trainees at levels 1–4. It is estimated that each year, just five trainees out of around 25 can pass the exit level examination and become psychiatrists[22].

The potential benefits of this study include that the institutes will know more about the perception of psychiatry as a career and factors which discourage the students from choosing psychiatry as a field and therefore, they will try to manage them by introducing interventions and opportunities contributing to increase the likelihood of psychiatry being chosen by students as primary choice of career.

METHODOLOGY

IRB/ERC Approval:

All the ethical considerations were observed while seeking permission from the Institutional Review Board of JSMU, Ref. No. JSMU/IRB/2022-600.

This was a quantitative cross-sectional study on final year and fourth year undergraduate medical students, who undertook psychiatry ward clinical rotations as they are expected to make an informed and careful career choice based on their clinical exposure in wards. We included government and private teaching hospitals in Karachi like Jinnah Sindh Medical University along with its affiliated private medical colleges, as Karachi is a culturally and ethnically diverse city with a literacy rate of almost 75%[23,24]. Students of 1st, 2nd, 3rd, and 4th year MBBS who had not undergone psychiatry ward rotation, students enrolled in programmes other than MBBS, or studying from other thana forementioned universities, and students who declined participation were excluded from our study. The duration of this study was 6 months, i.e. from 15th September, 2021 to 15th March, 2022. Using a study by Curtis-Barton in which 20% of students claimed that the 'prognosis of patients in psychiatry' discourages them from pursuing a career in psychiatry[25], hence taking a sample proportion of 20%, a confidence level of 95%, and a margin of error of 5%, a sample size of 246 was calculated. To avoid non-responding participants and missing data, the sample size was inflated to 272 responses. The participants were selected through a convenient sampling technique.

Before data collection, written informed consent was taken from each participant. Any research misconduct was avoided, and the rights and wellbeing of research participants were protected and every effort was made to ensure the confidentiality of research data collected from participants in this survey.

The information collected was stored with the principal investigator in the form of de-identified information. Any results that were generated were presented on a collective basis, and did not contain any individual participant's name or any other personal details.

Data was collected by distributing a self-structured questionnaire, which was sent online as a Google Form and also circulated manually. In order to standardize the questionnaire, a pilot study was conducted among participants to examine the content validity.

The study instruments were divided into two sections, including sociodemographic factors and questions measuring the knowledge of participants regarding psychiatry as a career. Age, gender, name of medical

college and year of study were taken as independent variables, followed by dependent variables like primary career choice and leading close-ended questions regarding psychiatry as a career choice assessing their knowledge. In the end, questions catering suggestive measures were included as well.

Data was entered and analysed using SPSS software version 24. SPSS is a software package used for interactive or batched statistical analysis. The interval of confidence was considered to be 95% , while 5% of the error margin was taken and =0.05 of the p-value was considered to be statistically significant.

RESULTS

A total of 272 medical students from four medical institutes with n=271(99.6%) from Karachi while n=1(0.4%) other than Karachi consented to participate in this study. Rate of responses from medical schools varied with n=132 (48.5%) Sindh Medical College, n=125 (46%) Dow Medical College, n=6 (2.2%) Liaquat College of Medicine and Dentistry, n=3 (1.1%) Karachi Medical and Dental College, and n=6 (2.2%) were from various medical institutes. Past experience of psychiatry ward rotation was also enquired via questionnaire with participants having done their rotations in year 2019 n=3(1.1%), 2020 n=22(8.1%), 2021 n=132(48.5%), 2022 n=103(37.9%) and n=12(4.4%) did not attend rotations. Majority of medical students n=260(95.6%) had clinical exposure, hence were making an informed decision regarding psychiatry as a career choice.

Mean age of participants was 22.9 years, extending from 21 years till 26 years. In relation to gender distribution, n=177(65.1%) identified as females, n=94(34.6%) identified as Males whereas n=1(0.4%) did not prefer to be identified on gender basis.

Primary analysis of study was to examine the probability of selecting psychiatry as the final field of choice among medical students. Five fields were given to participants in study questionnaire (General Medicine, Surgery, Obstetrics/gynaecology, Paediatrics, and Psychiatry), our data analysis demonstrated that General Medicine n=116 (42.6%) was most attractive postgraduate specialty followed by Surgery n=80 (29.4%), Psychiatry n=28 (10.3%), Obstetrics/Gynaecology n=27 (9.9%), and Paediatrics n=21 (7.7%). Survey demonstrated that Psychiatry was the third most common field selected by participants, however, the number of participants selecting psychiatry was low in comparison to General Medicine and Surgery, yet its selection proportion was nearly identical to the other two least opted fields with slight variations, i.e. Obstetrics/Gynaecology n=27(9.9%) and Paediatrics n=21(7.7%).

Overall statistical outcome suggested that n=19 (7%) were 'Very satisfied' considering psychiatry as a career choice, another n=73 (26.8%) were 'Satisfied', n=95 (34.9%) were 'Neutral', n=62 (22.8%) were 'Not so satisfied' and n=23 (8.5%) were 'Not at all satisfied'. Therefore, the results suggested a combined proportion of 33.8% medical students having positive mindset towards psychiatry as an eventual field of practice.

Demographic analysis was the first parameter in our study for medical students to associate with the choice of psychiatry. Almost equal number of males and females opted for psychiatry as their eventual field of practice with males n=27 (28.7%) and females n=53 (29.9%). Among all age groups that participated in our study, 23-year-old n=31(38.3%) participants chose psychiatry in the highest number.

Our study also indicated factors that significantly influenced choice of psychiatry as an eventual field of practice among participants. Level of satisfaction among participants to opt for psychiatry ($p<0.001$), and exposure of participants to mental illness within their close contacts ($p=0.013$) were found. No associations were established between student's choice of psychiatry and their mindset regarding psychiatry as a financially rewarding field, participant's financial reasons, and influence of friends and family.

Data analysis suggested statistical association of participants selecting psychiatry as their final field of practice and students having sufficient knowledge about psychiatry ($p=0.013$), around n=81(29.8%) out of 272 participants, opted for psychiatry as their eventual field of practice. N=34 (42%) stated that they had sufficient knowledge about psychiatry and n=47 (58%) indicated that they do not consider themselves to have satisfactory awareness at the moment.

Ward rotations and clinical exposure proved to be significant among medical students in selecting psychiatry as a career option ($p=0.026$). N=81(29.8%) opted for psychiatry as their eventual field of practice with n=68(84%) agreed that clinical experience will help them in making psychiatry as a career option while n=13(16%) disagreed. Majority of participants n=260 (95.6%) had clinical ward rotations with maximum students, n=235 students having done with their ward rotations within two years.

Our study indicated a statistically significant relationship between exposure to psychiatry lectures and career choice ($p=0.012$). n=81(29.8%) selected psychiatry as the ultimate field of training. Among these participants, n=55(67.9%) indicated that theoretical lectures helped them choosing psychiatry as career decision, however n=26 (32.1%) did not agree with it.

We also included one portion for the suggestions of participants through which we can understand the problem in choosing psychiatry as a career. Four options were given to participants, n=107 (39.3%). ‘’Creating opportunities for career guidance’’was the most popular choice, while n=72 (26.5%) chose‘ ‘Active efforts by authorities to reduce stigma among students associated with psychiatry as a career’’, n=71 (26.1%) opted for ‘’Providing more clerkship opportunities’,’ and n=22 (8.1%) selected ‘More robust and intense curriculum’.

DISCUSSION

Our study explored medical students' perceptions of psychiatry as a career option, drawing on data from 272 students across medical institutions in Karachi. Psychiatry was ranked as the third most popular choice among participants, indicating a gradual but promising shift in attitudes compared to other studies globally, which often place psychiatry lower in preference[2-4]. Approximately 10.3% of participants selected psychiatry as their preferred field, mirroring trends seen in past studies that suggest a growing interest in the specialty[6]. This local insight offers valuable information for policy makers and educators in Pakistan who are seeking ways to make psychiatry more attractive to medical students.

Interest in psychiatry showed little variation by gender, with similar rates between men (28.7%) and women (29.9%), reflecting findings from other research[8,9]. Satisfaction with psychiatry as a career option was modest, with 7% of participants reporting being ‘Very satisfied’ and another 26.8% ‘Satisfied,’ resulting in a cumulative satisfaction rate of 33.8%[7]. Additionally, our study highlighted a significant association between personal experiences with mental illness and an interest in psychiatry, underscoring how personal connections to mental health can positively influence career preferences[10,11].

Academic exposure, particularly through clinical ward rotations, was a major factor in shaping positive attitudes toward psychiatry. Such rotations provide hands-on experience, reducing stigma and fostering an informed interest, consistent with findings from previous studies[10-13]. Classroom lectures also had a positive impact, showing that structured educational engagement plays a vital role in cultivating an interest in psychiatry[10,14].

Participants identified a need for increased career counseling and greater efforts to reduce stigma around psychiatry within medical schools. These recommendations reflect gaps in institutional support for psychiatry, pointing to a need for structural changes within the curriculum to promote the specialty and address stigma at the college level. Policymakers and academic planners could use these insights to develop strategies that make psychiatry a more accessible and appealing career path, ultimately addressing mental health workforce shortages in Pakistan.

While our study offers important insights, several limitations should be acknowledged. Despite aiming for a multicenter approach, data was collected only from two medical institutions in Karachi, limiting the generalizability of our findings to other regions and institutions across Sindh. Other factors such as socio-economic differences and access to mental health resources may also influence attitudes and were not fully explored in this study. Furthermore, logistical and resource constraints, particularly in rural areas, limited our outreach and response rate. The study’s strength, however, lies in its diverse sample, which includes participants from varied ethnic and socio-economic backgrounds, offering a well-rounded view of attitudes within the surveyed institutions. This diversity helps to mitigate selection bias and enriches our findings with a more balanced perspective on students’ career interests in psychiatry.

CONCLUSION

Our findings indicate a growing interest in psychiatry among medical students, with 10.3% choosing it as their preferred specialty, positioning it as the third most popular field. This positive shift is largely influenced by personal connections to mental health and the impact of clinical clerkships and academic lectures, highlighting the importance of exposure and guidance in making career choices. Participants’ suggestions to increase career counseling and reduce stigma toward psychiatry, point to crucial areas for improvement in medical education. By addressing these factors, policymakers and educators can create a supportive environment that encourages more students to consider psychiatry, ultimately strengthening Pakistan’s mental health workforce and better meeting the country’s growing mental health needs.

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ORIGINAL ARTICLE

Association Between Haemoglobin Levels and HbA1c in Diabetic Patients: Insights from a Tertiary Care Hospital in Lahore

Rukhsana Tumrani[1], Sundas Waheed[2], Mehvish Sana[3], Haniah Ahmad[4], Afsheen Nigar[5], and Amber Rahim[6]

ABSTRACT

Objective: To determine the correlation between haemoglobin and HbA1c level in diabetic patients in Lahore
Methodology: Cross sectional study conducted in Pathology Department, Shalamar Hospital, Lahore from July to November 2023. Participants above 14 years of age, of all genders having both haemoglobin and HbA1c level analyzed, were included in this study. Patients below 14 years of age, those with history of haemoglobinopathies, acute or chronic blood loss, acute and chronic renal failure, alcoholism, and pregnant females were excluded. Data was entered and analyzed using SPSS version 25. The inferential statistics were used to correlate the significance of Haemoglobin and HbA1c.
Results: Of the total 312 study subjects, the mean age was 48.14±13.42 years, with 154(49%) males and 158(51%) females. Mean Hb level in males was 14.17±2.02g/dl while in females, mean haemoglobin level was 12.73±1.50g/dl with statistically significant difference of mean Hb level with respect to gender (p value <0.001). Mean HbA1c level in males was 9.09±2.12%. While in females mean HbA1c level was 8.60±2.21% with statistically significant difference of mean HbA1c % with respect to gender (P value 0.047). Positive correlation has been found between haemoglobin and HbA1c levels in diabetic patients in this study.
Conclusion: Significant positive correlation has been found between haemoglobin and HbA1c levels among female diabetic patients. The effect of low haemoglobin should be kept in mind while evaluating the HbA1c results in diabetic patients to monitor glycemic status, as misinterpretation leads to mismanagement of diabetic patients.

Keywords: Diabetes mellitus, glycosylated haemoglobin (HbA1c), haemoglobin

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INTRODUCTION

Patients with diabetes mellitus (DM) bear a heavy financial burden in addition to having a substantial impact on their life quality and duration[1,2]. In Pakistan, the prevalence of diabetes in adult population is rising (17.1%)[3]. Non communicable diseases, such as diabetes mellitus, are becoming more common in all nations, regardless of their level of development. There is strong evidence that developing nations have a higher prevalence of diabetes mellitus and the complications it causes, and that these differences can be prevented and controlled[4].

Protein glycation in diabetes is caused by hyperglycemia, and blood glucose levels are correlated with this process. An increase in the concentration of glycated haemoglobin [HbA1c] is linked to hyperglycemia. The most common kind of haemoglobin in HbA1 fractions is HbA1c[5]. The gold standard test

for diagnosis of diabetes mellitus and glycemic status monitoring is glycated haemoglobin (HbA1c). Since haemoglobin (Hb) is a necessary component of HbA1c, anemia may have an impact on HbA1c levels in addition to the numerous other factors[6].

Since iron deficiency anaemia (IDA) and diabetic mellitus (DM) are common worldwide, there is a considerable likelihood that these two conditions may coexist. Many patients would benefit from any clinical findings indicating a relationship between the body's iron level and glycosylated haemoglobin (HbA1c)[7]. Since the haemoglobin molecule participates in the non-enzymatic glycation reaction, it is expected that both blood glucose concentrations and the total haemoglobin concentration may have an impact on the HbA1c value[8].

The impact of a lower haemoglobin level on the HbA1c value has not been thoroughly studied up to this point, despite the high prevalence of anaemia. Owing to a high prevalence of diabetes and anaemia in our country, there is a need to study this correlation in our population, which can have significant impact in diagnosis and management of diabetic patients with anaemia. Only a few research studies have found a connection between anaemia caused by iron deficiency and HbA1c levels[8,9]. HbA1c readings may be impacted by any circumstances that affect haemoglobin characteristics, erythrocyte turnover, and haemoglobin glycation, regardless of glycemia. As a result, not everyone will have the same association between mean glycemia and the HbA1c value. Since the HbA1c result is determined by dividing total haemoglobin by glycated haemoglobin, it is possible that haemoglobin level influences HbA1c test findings separately from glycemia. That being said, no research has been done on the possible correlation between haemoglobin levels and HbA1c readings[10-12].

The study aims to determine the correlation between low haemoglobin and HbA1c levels in patients with type 2 diabetes mellitus. As deranged haemoglobin levels affect the glycosylated haemoglobin results which is used for monitoring the glycemic status, it may lead to misinterpretation of HbA1c results and mismanagement of diabetic patients.

METHODOLOGY

IRB/ERC Approval:

A cross sectional study was conducted in the Department of Pathology, Shalamar Hospital Lahore from July to November 2023. Data was collected after ethical approval from institutional review board vide Ref. No. SSAHS-IRB/AL/07/2023.

Sample size of 312 diabetic patients was calculated using online WHO sample size calculator with 5% margin error and 95% confidence interval. Participants above 14 years of age, of all genders having both haemoglobin and HbA1c levels performed in the lab were included in this study. While the patients below 14 years of age, those with history of haemoglobinopathies, acute or chronic blood loss, acute and chronic renal failure, alcoholism, and pregnant females were excluded. Non-probability consecutive sampling technique was used and data was recruited from Laboratory Information Management system. All data was anonymized and no additional testing was performed. Demographic data such as educational status, marital status, physical activity, and laboratory results were recorded on predesigned proforma. Standard operating procedures were followed by phlebotomist to collect the blood sample using aseptic techniques. Sterile syringes were used to draw blood of 5ml volume and injected it into pre labelled purple capped vials containing EDTA anti-coagulant. After injecting blood into vials, samples were mixed properly to avoid clot formation. All samples then brought to their concerned sections in the laboratory to carry out the haematologic and biochemical tests. Haemoglobin was determined using Sysmex XN-1000 by using SLS haemoglobin method. The HbA1c was analyzed on System reactive on Beckman coulter AU analyzer in human blood for the quantitative measurement of HbA1c. Data was entered and analyzed using SPSS version 25. Quantitative variables were presented in terms of mean and SD while qualitative variables were presented in terms of frequency and percentages. The inferential statistics were used to correlate the significance of Haemoglobin and HbA1c.

RESULTS

Of the total 312 study subjects, mean age was 48.14±13.42years with 134(43%) were =40 years of age while 178(57%) were >40 years age. Total 154(49%) were males while 158(51%) were females (Table 1). Demographic findings and distribution of study subjects with respect to different variables such as marital status, education, occupation, socioeconomic status, physical activity, past medical and drug history, comorbidities other than diabetes and BMI has been shown in Table 1. Table 2 shows the distribution of study subjects with respect to HbA1c and haemoglobin levels. Table 3 shows the comparison of mean haemoglobin level and mean HbA1c % with respect to gender. Mean Hb level in males was 14.14±2.02g/dl while mean HbA1c level was 9.09±2.12% with p value <0.001. While in females, mean haemoglobin level was 12.73±1.50g/dl while HbA1c level was 8.60±2.21% with p value 0.047 (Table 3). Scatter diagram in figure 1 shows positive correlation between haemoglobin and

Table 1: Distribution of study subjects with respect to Age, Gender, Marital status, Education, Occupation, Socioeconomic status, Physical activity, Past medical history, BMI and Comorbidities (n=312)

Variable	Subgroups	Frequency	%
Age (years) 48.14±13.42	=40	134	43
	>40	178	57
Gender	Male	154	49
	Female	158	51
Marital status	Married	254	82
	Unmarried	58	18
	Illiterate	72	23
Education	Elementary (1-8)	130	42
	Secondary School	98	32
	College or more	12	3
Occupation	Health worker	15	5
	Civil servant other than health worker	22	7
	Merchant	2	1
	Student	10	3
	Unemployed	108	35
	Housewife	128	41
	other	27	8
Socioeconomic status	Low	280	89
	Middle	20	7
	High	12	4
Physical Activity	H/o Regular Exercise	94	30
	No H/o Regular Exercise	218	70
Past Medical history/Drug history	H/O heart attack	81	26
	Taking Insulin	59	19
	Taking Glucophage	147	47
	Not taking medicine regularly	25	8
Comorbidities other than diabetes reported by the patients	Hypertension	215	69
	Retinopathy	28	9
	Nephropathy	19	6
	Ischemic heart disease	50	16
BMI	Normal	109	35
	Overweight	81	26
	Obese	122	39

Table 2: Distribution of study subjects with respect to haemoglobin(g/dl) and HbA1c (%) levels (n=312)

Variable	Subgroups	Frequency	Percentage
Haemoglobin (g/dl)	=10	147	47
13.44±1.91	>10	165	53
HbA1c (%)	=8	174	56
8.85±2.17	>8	138	44

Table 3: Comparison of mean haemoglobin and HbA1c level with respect to Gender (n=312)

Variable	Subgroups	Haemoglobin		HbA1c		Pearson correlation	*P* value
		Mean	SD	Mean	SD		
Gender	Male	14.17	2.02	9.09	2.12	0.081	0.315
	Female	12.73	1.50	8.60	2.21	0.175	0.029
P value		<0.001*		0.047		---	

* Significant p value

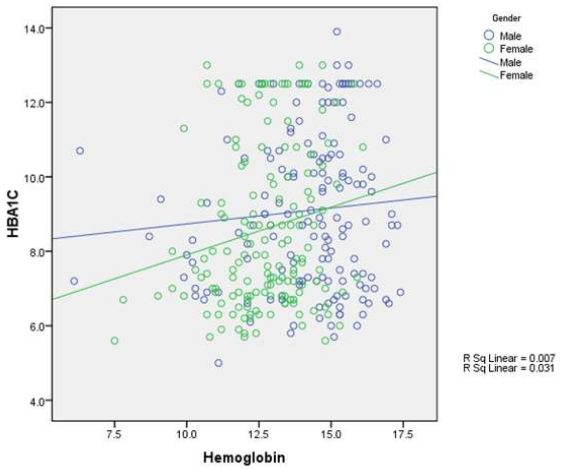

Figure 1: Scatter Diagram Showing Positive Correlation Between Hb and HbA1c

HbA1c levels. By applying Pearson correlation, we found positive correlation between haemoglobin and HbA1c i.e., r = 0.154, p-value (0.007). On stratifying, there was no significant correlation among males, r = 0.081, p-value > 0.05 while positive correlation between Haemoglobin and HbA1c was seen among female cases i.e. r = 0.175, p-value < 0.05 (Table 3).

DISCUSSION

In this study, we determined the correlation of haemoglobin and HbA1c in participants at primary healthcare level. Results indicated that 278 (89%) of 312 study participants had high levels of HbA1c. Those participants who had high levels of HbA1c observed that they had previous history of diabetes, hypertension, not regularly doing their exercise, not taking their routine medicine. Statistically significant correlation

of haemoglobin and HbA1c has been found with respect to gender in our study while a similar study was conducted with different results had shown negative correlation between haemoglobin and HbA1c and no significant difference in HbA1c values[13].

On the basis of our study, positive correlation between haemoglobin and HbA1c was seen. While classifying on the basis of gender, no significant correlation between haemoglobin and HbA1c was seen among males while among female positive correlation was seen between haemoglobin and HbA1c. The findings are inconsistent with the study conducted by Bhutto et al in which the study population had a mean HbA1c of 8.278±5.015%, with a maximum value of 16.2%, indicating moderately uncontrolled HbA1c. While the mean random blood sugar was 236±57.390 mg/dl, the mean fasting blood sugar was 158±39.50 mg/dl. While other RBCs and/or haematological measures, such as MCV, haemoglobin, and platelets, indicated no significant link, the statistical analysis showed that the correlation between HbA1c and RDW was significant (p-0.035)[14]. Findings are inconsistent with another study conducted by Mustapha et al[15].

Another study conducted by Arif et al has established the association of Red-cell distribution Width with the glycemic control and long-term complications of diabetes mellitus in which they have found the statistically significant association with p value <0.001[16]. While these findings are inconsistent with another study conducted by Zhang et al[17]. In our study, we found that BMI was clinically significant for diabetes. Overweight participants had higher risk of developing diabetes. At the same time, another study showed that BMI was strongly significant with diabetes in those patients who were diabetic, hypertensive, and had cardiovascular disease. Higher than average BMI was continuously linked to a higher likelihood of receiving a type 2 diabetes diagnosis as demonstrated by Gray et al in their study. On the basis of their study, it was suggested that women were more likely than men to be diagnosed with diabetes mellitus among overweight people. Men became at an increased risk of diabetes (HR=1.34) in the top range of the overweight group (27.5 = BMI = 29.99), while women became at an increased risk of diabetes (HR=1.31) when they are just slightly overweight (25 = BMI = 27.49). For both men and women, the risk of getting diabetes mellitus at 30 < BMI = 39.99 was almost equal to that of those with a normal BMI (HR=1.98 for males vs. HR=1.96 for women). Men had a greater chance of developing diabetes mellitus (DM) at BMI = 40 (HR=2.85 for men vs. HR=2.51 for women). Additionally, a higher cumulative risk for all DM complications was linked to elevated BMI. Women were more likely than males to be diagnosed with a DM complication if they were overweight[18].

The findings are consistent with another study conducted by Ohno et al[19]. Numerous epidemiologic researches have revealed that diabetes was a continuous risk factor for many diseases and that people with diabetes had multiple times higher chances of cardiovascular illness. The result of the glycation reaction between glucose and haemoglobin amidogen under non-enzymatic catalysis is HbA1c, which is a significant indicator of glycol-metabolism capacity. The majority of diabetic patients have aberrant HbA1c levels, which are thought to be a useful indicator for tracking the therapeutic effects of medication and glycol-stability. This index is also characterized by fast operating times and straightforward procedures, and it remains unaffected by recent dietary changes and medication[20].

Our study had certain limitations. The effect of deranged haemoglobin was not evaluated at different levels to see the discrepancy in HbA1c results which might help in evaluation of HbA1c results especially in the setting of low haemoglobin. It is recommended to further evaluate the validity of results with larger sample size and discrepancy should be evaluated further.

CONCLUSION

We concluded that significant positive correlation has been found between haemoglobin and HbA1c level among female diabetic patients. Deranged haemoglobin level in case of anaemia, influence the HbA1c results which are used for monitoring the glycemic status in diabetic patients. The effect of decreased haemoglobin should be kept in mind while evaluating the HbA1c results in diabetic patients to monitor glycemic status, as misinterpretation leads to mismanagement of diabetic patients.

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ORIGINAL ARTICLE

Exploring the Risk Factors and Practices of Self-medication for Oral Problems Among Dental Patients

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ABSTRACT

Objective: The present study aims to identify common types of medications used for self-treatment by individuals aged 18-35 years and to explore the influence of socio-demographic factor on self-medication practices among patients visiting Dow International Dental College, Karachi

Methodology: The study was conducted at the diagnostic Department of Dow International Dental College DIDC, DUHS. A closed-ended, self-administrated, structured questionnaire was given to study participants in diagnostic OPD. *Data Analysis*: This was done by using IBM-SPSS ver. 2.1. Mean and SD were calculated for variables whereas frequency and percentage were calculated by descriptive analysis.

Results: The participants in the study were between the age range of 25 – 34 years old. Females were in majority taking self-medication. Regarding the education level, the secondary education level comprised the largest group on self-medication (n=250). The majority of the participants lived nearest to the health Centre i.e. less than 1km away. The usage of oral analgesics was found in most i.e. 35.3% and these medications were purchased mostly from pharmacy shops by 122 participants (73.5%). The reason for taking self-medication was after triggering factors of pain i.e. 254 (75.6%) only for a few days.

Conclusion: This research concluded that the use of self-medication was found in most of the young adult population and dental pain is the most common reason for self-medication. Analgesics were the most frequent medication used as self-medication.

Keywords: Antibiotics, scocioeconomic lifestyle, oral health problem, risk, self-medication

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INTRODUCTION

Taking Self-medication means the usage of medication on one's own without a doctor's prescription for managing self-recognized discomforts[1]. It is an important component of self-care combined with other factors like socioeconomic lifestyle and environment. Some think this practice is cost and time-saving whereas drawbacks include misdiagnosis, drug resistance and wasting of resources[2]."In an emerging world, self-medication is prevalent." It is designated as using medications to cure self-medicated ailments and doing pharmacological intervention without seeking skilled advice[3].''

In South Asian countries, pharmacy stores are the people's priority and their contact point for healthcare delivery which is the reason drugs are more accessible to common people[4] .The most common self-medication

used in developing countries are painkillers and antibiotics, and these are also used in the field of Dentistry for oral problems[5].

Self-medication (including antibiotics) is common in many countries due to a shortage of admittance to community well-being, being an inexpensive substitute for visiting a health care facility, the accessibility of various remedies over the counter (OTC), and inadequate medicine monitoring strategies[6].

Oral mucosal discomfort might be associated with the misuse of systemic medications. Recently, more than 35 medications were shown to cause gingival inflammation.

Meanwhile, there are no stringent conventions governing self-medication, and misuse of antibiotics will be one of the chief contributing factors to developing antibacterial resistance[7]. Furthermore, this can also result in erroneous self-diagnosis, delays in pursuing appropriate medical attention, serious drug collaborations, drug dependency, drug exploitation, and unsuitable medication prescription and selection[8]. Pain is the most common symptom in the dental profession[9]. Dentists know that patients suffering from dental pain frequently self-medicate with analgesics to avoid dental treatment or consulting a dentist. Furthermore, antibiotics are frequently used in conjunction with analgesics. This results in issues such as side effects, drug interactions, expenditures, and the global emergency of drug-resistant pathogens[10].

Certain health problems have been linked to training in self-medication globally. These include medicine abuse, and noncompliance through recommended concentration or dosage, which contributes to the emergence of antimicrobial-resistant strains, medication interactions, organ damage, and the use of expired medications[11]. The present study aims to identify common types of medicines used for self-treatment by individuals aged 18-35 years, to explore the influence of sociodemographic factors on self-medication practices among patients visiting Dow International Dental College.

METHODOLOGY

IRB/ERC Approval:

The research was approved by the ethical review committee of The Dow University of Health Sciences Ref. No. IRB-2634/DUHS/Approval/ 2023).

This cross-sectional descriptive hospital-based research was conducted at the OPD of Dow International Dental College, DUHS. Data collection procedures were performed according to the guidelines provided by Helsinki. The sample size for this study was determined to be 430, calculated using the OpenEpi software. Patients within the age range of 18-35 years, both males and females visiting dental OPD who are on self-medications were included.

The estimated population of approximately 5,000 individuals residing near Dow International College was used as the reference population. A confidence level of 95% and a margin of error of 5% were applied. Participants aged 18–35 years were selected through simple random sampling. The data was collected from July 2023 to November 2023. Informed verbal and written consent were obtained from all participants before they were given a survey questionnaire.

A closed-ended, self-administrated, structured questionnaire was given to study participants in diagnostic OPD. The questionnaire consisted of three sections: Section 1 asked about basic demographic and socioeconomic status, section 2 asked about oral hygiene status, and section 3 asked about self-medication prevalence. The questionnaire was pre-tested with experts in related fields to ensure its validity. For reliability, Cronbach's Alpha was used with a value of 0.7.

Collected data was evaluated using the software IBM-SPSS ver. 2.1. Mean and SD were calculated for variables whereas frequency and percentage were calculated by descriptive analysis.

RESULTS

The number of study participants included in this research was 430 with the age range between 18-35 years. Females were in the majority on taking self-medication i.e. 260 and males were 170. Concerning literacy levels, individuals with secondary education were found to engage in self-medication practices predominantly.(n=250) as shown in Table no: 1. When asked about the distance from the home to the primary health care center, the majority of the participants lived near the health Centre i.e. was less than 1km as shown in Table no: 2. Oral analgesics were the most frequently used as self-medication i.e. 35.3% and also that those medications were purchased from nearby pharmacy shops i.e. 22 (73.5%). The triggering factors of pain being the reason for the usage of self-medication i.e. 254 (75.6%) only for a few days, and the second most common reason for self-medication was having any kind of previous experience of treating the same type of illnesses i.e.101 (60.8%) as shown in Table no: 3.

Table 1: Demographic information of study participants

Characteristics	Number (n)
Gender	*Gender*
Female	260
Male	170
Age of Participants	
18-24 years	110
25-34 years	320
Marital Status	
Unmarried	169
Married	261
Education	
Primary level	35
Secondary level	250
Bachelors	78
Masters	67

Table 2: Distance from home to Primary Health Care Centre

More than1 km	184
Between 1-2 km	138
Greater than 2 km	108

Table 3: Survey questions

Questions	Frequency n (%)
Types of Self-Medications	
Oral Analgesics	200 (35.3)
Anti-Inflammatory	70 (9.3)
Topical Analgesics	8 (1.3)
Oral Analgesics + Antibiotics	55 (20.0)
Antibiotics	25 (2.7)
Others	72 (31.3)
Duration of Self-Medication	
Few days	90 (59.0)
Weeks	15 (8.6)
Month	45 (26.7)
Triggering Factor	
Toothache	99 (60.8)
Swelling/ulcers	18 (10.8)
Bad breath	12 (7.2)
Gingival Bleeding	10 (6.0)
Others	20 (15.1)
Reason for Self-Medication	
Advice by friends	46 (27.7)
Lack of Resources	7 (4.2)
Previous experience	101 (60.8)
Social Media	4 (2.4)
Not Access Hospital	3 (2.2)
Others	5 (2.6)
Source to Obtain Medication	
Pharmacy	89 (52.9)
Clinic	42 (21.3)

DISCUSSION

In this study, a cross-sectional survey was done on the practice of self-medication patients coming in Dental OPD of Dow International Dental College, DUHS. Predominantly females were more on the usage of self medication[12] with the most common age range between 25-34 years old. That indicates that most of them were at their middle-aged. These findings were as same as the study conducted in India by Ghimire et al[13]. This might be possible that individuals within this age range have more workload with stressful and unhealthy lifestyles along with this also have more access to different pharmacies to get medicine.

When asked about the period for practicing self-medication, it was reported that most participants take them for a few days only and stop will the problem subsides, and the triggering factor for self-medication is the pain sensation. These results were similar to the previous research done by Komal Raj and et al[7] in the South Asian population. This shows that medications can easily come from a variety of sources and these are affordable to people. The most used self-medication as seen in the present study population was oral analgesics. The reason for this practice is probably due higher occurrence of orofacial pain and also a greater fear of the dentist and expensive procedures. These measures were almost similar to the studies conducted among respondents in Bangalore[14] and Karnataka, India[15]. However, the real underlying cause should be further explored in future research. In terms of the duration of self-medication practice, most of them used only for a few days, as this practice is found similar and observed in the people of Saudi Arabia[16]. Another question was asked in this study regarding the reason for self-medication. It was found that this was due to the advice received from close friends. Similar findings were also previously reported by the other researchers[17].

The primary source for obtaining any kind of medication was the nearest Pharmacy shop among the participants of this current study. These results were in line with other study findings that show about for 66% of Saudi Arabian residenta[12,16,18]; 46% of Brazil residents[19] and 86% of Indian study participants,[20] local pharmacies were preferred as their source to obtain medication. It was also reported that local pharmacy is one of the most reliable sources in this study.

Furthermore, the local pharmacist might play an important role play in addressing various issues related

to the purchasing of self-prescribed medications as these nearest pharmacy stores are the primary source for taking medication, and awareness campaigns for practicing proper medication may benefit in reducing drug abuse usage among the local population. In this study, the trigging factors for usage of self-medication were also asked which was found to be mainly toothache, followed by ulcers. Toothache was reported as a more frequent triggering effort for taking medication, and it was reported in most of the other studies including in countries like India[4], Saudi Arabia[21] and Malaysia[11] Most people prefer to self-medicate when encountering a mild toothache.

In terms of frequency of self-medication practice, most of them self-medicate only for a few days, or when necessary, similar results were observed in the Saudi population and also in other South Asian countries[22]. The major reason behind taking self-medication was because of a mildest to exceeding moderate perception of pain or discomfort from their dental problem that might indicate that people wanted to avoid the long waiting time for dental treatment. This present study proved that the younger population follows the practice of self-medication more.

This descriptive cross-sectional study on self-medication did not access detailed specific names of medicines, as the community that was targeted might not be able to remember specific names of medications. In addition, no information was given to the respondent regarding usage for self-medication. Furthermore, the data was collected only at Dow International College, limiting the generalizability of the findings to other geographical areas or diverse populations.

CONCLUSION

This study concluded that self-medication was prevalent among the majority of the young adult population, with dental pain being the most common reason. Analgesics for toothache emerged as the most frequently used medication for self-medication.

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Authors' Contributions: JJ: Contributed to the study design and manuscript writing.MP: was responsible for data collection and manuscript writing, Conducted Statistical analysis. SZA: Conducted the statistical analysis and contributed to the final manuscript. FA: played a key role in the study design and its final approval. SAA: Contributed to the final manuscript, while Zoya Dayala assisted with data collection.

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ORIGINAL ARTICLE

Comparison of Incidence of Superficial Surgical Site Infection in Primary Closure over Drain versus Delayed Primary Closure in Patients Undergoing Exploratory Laparotomy for Peritonitis

Amin Mazhar Chaudhry[1], Muhammad Kashif Malik[1], Maliha Javaid Butt[3], Syed Muhammad Bilal[2], Muhammad Waseem Ashraf[3], Muhammad Junaid Mushtaq[3], Wasim Hayat Khan[4], Roshan Butt[3], and Nauman Ismat Butt[5]

ABSTRACT

Objective: To document difference in incidence of superficial surgical site infection (SSSI) following primary wound closure over a drain versus delayed wound closure after exploratory laparotomy for generalized peritonitis.

Methodology: A prospective cross-sectional observational study was carried out at Surgical Unit-II, Services Hospital, Lahore, from January 2016 to December 2020. Patients between the ages of 12 and 65 years who had presented in the surgical emergency with peritonitis requiring exploratory laparotomy were enrolled. Approval from Institutional Review Board and written informed consent from all the patients were obtained. Midline laparotomy was made in all cases. In group A, primary closure of wound over a corrugated rubber drain (CRD) was done. In group B, each patient's wound was left open for twice a day dressing with saline-soaked gauze with delayed closure on 5th post-operative day. After surgery, patients were shifted to ward and were followed-up there for seven days. Then patients were discharged and were followed up in OPD weekly up to the 30th day after surgery. Wounds were examined at follow up for SSSI. The data was entered and analyzed through SPSS version 20. Comparison of frequency of SSI in both groups by using chi-square test was done using p-value =0.05 as significant.

Results: Mean age of the participants was 35.51±14.11 years with 118 (60.20%) males and 78 (39.80%) females. Total of 23 (11.73%) patients had SSI and 173 (88.26%) patients had no SSI. No statistical difference of SSSI was seen between both groups.

Conclusion: No significant difference was found in the incidence of SSSIs between primary closure over a drain and delayed wound closure following exploratory laparotomy for generalized peritonitis.

Keywords: Delayed primary closure, drain, primary closure, superficial surgical site infection

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INTRODUCTION

Wound infection is the invasion of infective organisms through body tissue after breakdown in local and systemic host defenses. Infection at surgical site within 30 days of surgery is surgical site infection (SSI) and is a common post-operative complication. It results in additional interventions, prolonged stay in hospital, increased cost, increased morbidity and mortality.[1] The CDC has reported approximately 110,800 SSIs in the year 2015.[2] SSI constitutes 20% of all hospital acquired infections and increased mortality risk by 2 to 11 fold.

The annual cost of SSI is estimated to be 3.3$ billion annually. On average, the length of hospital stay is increased by almost 10 days due to SSI per patient.[3-5] The CDC has developed a system for surgical wound classification with the aim to identify patients with surgical wounds that are at risk to develop SSI. It classified surgical wounds into four types: clean as type 1; clean/ contaminated as type II; contaminated as type III; and dirty as type IV. It has been noted that the incidence of deep and superficial surgical site infection increases with type 3 and type 4.[6]

Exploratory laparotomy for perforation is one of the common cases faced by surgeons in the Emergency. Post-surgery infection after such cases is expected.[7] Various techniques are used to mitigate these. Thorough intra-peritoneal lavage, antibiotics, and intra-abdominal drain placement are some of the methods to reduce deep surgical site infections. While multiple techniques are adopted by surgeons for skin wound closure to prevent superficial surgical site infections in such cases. One of the most commonly used ways is to delay the closure of wounds in patients with dirty or contaminated wounds. Some studies demonstrate that while delayed primary skin closure is simple and cheap way to reduce the incidence of SSI, the literature so far has failed to provide significant evidence to support this view.[8] Historically, delayed primary closure was used to reduce SSI risk especially in contaminated cases. This allows a closed wound while reducing morbidity. But similar results have not been obtained by all researchers.[9]

There are only limited studies done from our part of the world on this subject. We, therefore, attempted to document the differences in frequency of superficial surgical site infection (SSSI) with primary wound closure over a drain versus delayed wound closure after exploratory laparotomy for generalized peritonitis. The rationale for conducting this study stems from the need to address the high incidence of SSSIs following exploratory laparotomy for perforation, particularly in patients with generalized peritonitis. While various techniques are employed to reduce the risk of infection, including thorough lavage, antibiotics, and drain placement, the optimal approach for skin wound closure remains a topic of debate. Delayed primary closure is widely used in contaminated wounds, but existing evidence regarding its effectiveness in reducing SSSI is inconclusive, with limited data from our region. By comparing the rates of SSSI in patients with primary versus delayed wound closure, this study seeks to provide valuable local data that could guide clinical practice and improve postoperative outcomes for patients undergoing emergency laparotomy.

METHODOLOGY

IRB/ERC Approval:

A prospective cross-sectional observational study was carried out at Surgical Unit-II, Services Hospital, Lahore, from January 2016 to December 2020 after approval by the Institutional Review Board Ref No. IRB/2015/167/SIMS.

We had a sample size of 196 cases; 98 cases in each group was calculated with 95% power of test, 5% level of significance and taking expected percentage of SSI i.e. 23.5% with delayed closure and 5.6% with primary wound closure over a drain after exploratory laparotomy for generalized peritonitis.[8] Patients between the ages of 12-65 years who had presented in the surgical emergency with peritonitis requiring exploration were included in the study. The diagnosis was based on clinical assessment and radiological workup. All patients were examined by consultants in the Emergency prior to decision for exploration. After obtaining written informed consent, the patients were allocated into two groups by using a computer-generated randomization table.

Pre-operative resuscitation was done in all cases. All patients were started on intravenous antibiotics and fluids which were also continued post-operatively. Surgery was performed under supervision of emergency consultant in the Emergency department. Midline laparotomy was made in all cases. After management of intra-abdominal pathology, thorough peritoneal lavage was done. Drains were placed intra-abdominally. No. 1 polypropylene was used to close the abdominal fascia (linea alba). In group A, primary closure of wound over a corrugated rubber drain (CRD) was done. Dressing was done which was changed daily in the ward. In group B, patients' wounds were left open for delayed closure on fifth post-operative day. The same surgical team performed all surgeries. After surgery, patients were shifted to ward. Daily wound evaluation was done for seven days. Then patients were discharged and were followed-up in OPD weekly up to the 30th day after surgery. Wounds were examined at follow-up. SSSI was labelled as positive if infection occurred within 30 days of surgery. The following criteria was used to define infection: presence of >1 of the following: fever (>99 F for 24 hours), pain or redness at wound site, localized swelling, or purulent discharge (pus) from wound. The patients, who developed SSSI, were managed as per hospital protocol.

All data was entered into SPSS version 20 and analyzed. Mean and standard deviation were calculated for numerical variables such as age. Frequency and percentage were generated for qualitative variables such as gender and SSSI. Affected modifiers were controlled through stratification and to compare frequency of SSSI in both groups, Chi-Square test was employed using p-value=0.05 as significant. Stratification of data was done to address the effect modifiers.

RESULTS

We enrolled 196 patients in this prospective cross-sectional observational study. Computer generated randomization sequence was used to divide the patients into two equal groups. Mean age of the participants was 35.51±14.11 years with 118 (60.20%) male and 78 (39.80%) females. Mean ages of the patients in both groups were similar as shown in Table 1 and more than half of the patients were male in both groups. Total of 23 (11.73%) patients had SSSI and 173 (88.26%) patients had no SSI. When comparison of the two groups was done, no significant difference in SSSI was found in both groups as shown in Table 2. Stratification of surgical site infection (SSI) in both groups with respect to age and gender is shown in Table 3.

Table 1: Patient age and gender distribution in both groups

Group Assigned	Mean Age (years)	Male	Female
Group A: Primary Closure	33.42 ± 12.37	64 (65.30%)	34 (34.69%)
Group B: Delayed Closure	37.60 ± 15.48	54 (55.10%)	44 (44.89%)

*= significant p value=0.05

Table 2: Comparison of Superficial Surgical Site Infection (SSSI) according to group assigned

Group Assigned	SSSI		p-value
	Yes	No	
Group A: Primary Closure	10 (10.2%)	88 (89.79%)	0.57
Group B: Delayed Closure	13 (13.26%)	85 (86.73%)	

*= significant p value=0.05

Table 3: Stratification of Superficial Surgical Site Infection (SSSI)

Clinical variables	Group Assigned	SSSI		p-value
		Yes	No	
Age = 40 years	Primary Closure	2	72	1.00
	Delayed Closure	2	61	
Age > 40 years	Primary Closure	8	18	1.00
	Delayed Closure	11	22	
Male gender	Primary Closure	3	61	0.1372
	Delayed Closure	7	46	
Female gender	Primary Closure	6	28	0.5163
	Delayed Closure	4	40	

*= significant p value=0.05

DISCUSSION

Our study showed no statistical difference in frequency of superficial surgical site infection (SSSI) among peritonitis patients undergoing primary wound closure versus delayed closure following exploratory laparotomy. Surgical site infection has been documented for hundreds of years.[10] It is also associated with increased morbidity of the patients. There is an immense interest in finding methods to reduce the surgical site infections. Different surgical techniques were also employed to counter this problem.[11] Wound in patients after peritonitis are classified as "dirty" class IV. These wounds have been documented to have a higher rate of complications. DPC was initially used for the management of soft tissue injuries during trauma and later was adopted elsewhere. Prospective studies have yielded variable results. Few studies reported similar SSSI rates when comparing primary and delayed primary closure where as other studies have shown that Delayed Primary Closure to have a lower wound SSSI rate than primary closure.[12,13] A multicenter randomized trial from Thailand showed no statistical differences of SSSI rates in the two groups but it was lower in primary closure approach.[14] A randomized control trail done in India showed that delayed primary closure resulted in decreased superficial surgical site infections although this did not lead to a shorter hospital stay.[15]

When we review the different meta-analysis, mixed results are seen again found no difference when comparing SSSI between primary and delayed primary closure[16,17]. Tang suggested that delayed primary closure may have a better outcome but there was no significant evidence. Similar findings were also noted by Tang in his meta-analysis.[18] Siribumrungwong et al.[14] found no difference in the outcomes of the two groups while Henry and Moss determined primary closure to be more effective as opposed to delayed primary closure. In our study, out of 196 patients randomized into two groups, primary closure of the wound over a drain and delayed wound closure, only 23 patients (11.73%) developed superficial surgical site infections (SSSI). This finding suggests a relatively low incidence of SSSI across both groups, warranting further analysis of the differences between the two closure techniques in terms of infection rates and other postoperative outcomes.

Our is a large sample size study but we found no statistically significant difference between either technique although infection rate was less in the primary closure over CRD as opposed to delayed closure group. Furthermore, we focused only on infection rate, and other parameters, such as hospital stay length and

patient preference, may also be considered. In our view, primary closure over a drain is an efficient way to close the abdominal wound at the primary surgery since, although there is no difference in outcome between the two methods, primary closure over CRD avoids a second intervention and allows the patient to be more comfortable as the wound is closed at the time of the primary surgery. From Lahore, Ghous et al.[19] reported SSIs in 13.5% patients undergoing emergency abdominal surgeries, with staphylococcus aureus being the most common pathogen. Khan et al.[20] reported SSIs in 12.6% patients undergoing exploratory laparatomy while pseudomonas aeruginosa being the most frequent cause.

One limitation of our study is the potential influence of **bacterial contamination** on the development of SSSI. While bacterial cultures were not uniformly available for all patients, those obtained during surgery could provide insight into the microbial environment and its impact on infection rates. The presence of certain pathogens, particularly those from bowel content or other infected intra-abdominal sources, may have influenced the occurrence of SSSIs independently of the wound closure technique used. Therefore, variations in bacterial growth and the pathogenicity of the organisms cultured could represent a confounding factor that may not have been fully accounted for in our analysis. This could have affected the over all infection rates in both groups, potentially skewing the results and limiting the generalizability of our findings. Furthermore, it is important to note that **ICU admission** and other postoperative complications were not part of the scope of this study, and future research could benefit from investigating the impact of different wound closure techniques on the need for intensive care and over all recovery outcomes. Other limitations of our study include its **single-center design**, which may limit the generalizability of the findings to broader populations, as well as the **lack of blinding** in patient allocation, which could introduce bias in outcome assessment. Additionally, the study did not control for **patient co-morbidities** such as diabetes mellitus or immunosuppression, which may have contributed to variations in infection rates. Finally, the relatively **short follow-up period** may not capture late-onset infections or complications that could influence long-term outcomes.

CONCLUSION

In conclusion, our study found no significant difference in the incidence of SSSIs between primary closure over a drain and delayed wound closure following exploratory laparotomy for generalized peritonitis, suggesting that both techniques may be equally effective in preventing SSIs in this patient population. This suggests that neither technique provided a significant advantage in reducing the incidence of SSIs, indicating that other factors, such as bacterial contamination, patient co-morbidities, and intraoperative conditions, may play a more critical role in infection outcomes. We recommend that both primary closure over a drain and delayed wound closure be considered viable options for wound management after exploratory laparotomy for generalized peritonitis; however, further multicenter, randomized controlled trials with larger sample sizes and longer follow-up periods are needed to better understand the long-term outcomes and the role of bacterial contamination in infection rates.

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Authors' Contributions: AMC: conceived the study; MKM: designed the methodology; SMB: conducted the literature research; MJB: performed data collection; MWA: handled data assembly; MJM: assessed patients; RB: wrote the manuscript; WHK: critically reviewed the manuscript; and NIB: provided final corrections and served as the corresponding author.

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ORIGINAL ARTICLE

Exploring the Concept of Health-Related Quality of Life Among People with Heart Failure in Karachi, Pakistan

Anny Ashiq Ali[1], Khairulnissa Ajani[2], and Ambreen Gowani[3]

ABSTRACT

Objective: This study aimed to explore and understand the in-depth meaning of HRQoL among HF patients in a tertiary care hospital, Aga Khan University Hospital, Karachi, Pakistan. By conducting in-depth interviews and engaging with the patients, this research aimed to uncover the shades of their daily struggles, aspirations, and adaptations
Methodolgy: A qualitative interpretive design was used to study heart failure patients' perceptions of their HRQoL. Through the Purposive sampling technique, 14 Heart Failure patients were selected from the outpatient department of AKUH. In-depth semi-structured interviews were conducted until meaningful information was achieved. A manual content analysis technique followed to analyze the data.
Results: The study's findings revealed two major themes. Theme one, "Heart Failure Patients' Perception about Health," highlighted participants valuing good health, the role of good health for maintenance, and the prioritization of well-being. Participants underscored the significance of health as a precious asset, emphasizing how HF had transformed their perception of good health and motivated them to take active measures to maintain it. The second theme identified, "Attributes of HRQoL in Heart Failure," participants described how HF had redefined their roles: It required dietary adaptation, intervened in their social and family relations, and took them on a path toward acceptance. This is the theme that showed the variation of impact of HF in changing the daily responsibilities by meeting their dietary restrictions and social and family changes that came into their lives.
Conclusion: This study highlights the perceptions and experiences of HRQoL among HF patients in Karachi. If a better quality of life in relation to health is to be promoted in Pakistan among heart failure patients, the findings bring out the need to address the physical, emotional, social, and cognitive constituents of HRQoL. Such information can help to enrich person-centered care and therapies, enhancing the quality of life for patients suffering from heart failure in Pakistan.

Keywords: Dietary adaptation, heart failure, hrqol, patient perceptions, person-centered care, social relations

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INTRODUCTION

Heart failure is a chronic, progressive condition that impairs the ability of the heart to pump blood efficiently. It is an extremely common and rapidly expanding health-related problem, estimated to affect about 26 million people worldwide. The major symptoms for heart failure are poor exercise tolerance, fatigue, edema in the legs and ankles, and dyspnea[1]. According to the Non-communicable diseases (NCD) country profiles 2014 of the WHO, the country has to bear the dual burden of non-communicable diseases, which accounts for 49%, and communicable diseases, which accounts for 38%. It is believed that NCDs constitute about 77% of age-standardized mortality and are among the top 10 causes of sickness and death in Pakistan. Most of the NCDs, such as diabetes, hypertension, cancer, and other associated ones, are at very high prevalencein Pakistan[2]. The mortality rate of cardiovascular disease (CVD) is increasing worldwide, with 80% to 86 % of fatalities occurring in low- and middle-income nations (LMICs). Moreover, 82% of the 16 million fatalities caused by NCDs occur in LMICs, with CVD accounting for 37 % of these deaths[3]. Heart Failure (HF) is a critical ailment for which there is typically no treatment, but when the problem is controlled with HF treatments and lifestyle modifications, many individuals with HF have full, productive lives[4]. Moreover, health care is changing worldwide, therefore every individual who

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is at risk of CHF or having, must modify their lifestyle and know about their health-related quality of life.

The patients' health-related quality of life (HRQoL) is greatly impacted by HF, which also causes severe morbidity and mortality HRQoL is a broad term that refers to how patients perceive the effects of their condition overall. It indicates, at the very least, social, emotional, and cognitive, as well as physical, functioning[5]. According to WHO, an individual's perspective of their life, concerning their aims, expectations, standards, and priorities is influenced by their culture and value systems[6].

There is a shortage of global evidence about how people with HF living in different contexts define their HRQoL. To expand the HRQoL of people with HF it is important to assess their HRQoL using valid and reliable tools. However, most of the HRQoL tools in HF have been developed in the West and are based on the Western population; they may or may not necessarily reflect the aspects of HRQoL that the people with HF uphold in the Pakistani context. Therefore, it is difficult to ascertain if the Western HRQoL is suitable for use in Pakistan unless an understanding is developed about the definition of what HRQoL means for people with HF. This study provides basic knowledge regarding the HRQoL of people with HF in Pakistan.

METHODOLOGY

IRB/ERC Approval:

Data in this study were collected between March and June 2023, and data collection commenced following approval by the Aga Khan University Ethical Review Committee with Ref. No:2023-8165-23834.

This was an interpretive qualitative study conducted at Karachi, Pakistan, to explore perceptions about HRQoL among HF patients. Purposive sampling was done on 14 patients with HF from an outpatient cardiac clinic of a tertiary care hospital, Aga Khan University Hospital, in Karachi, Pakistan. Objectives of the study were explained to all participants and written informed consent was taken from every participant.

Each interview took 30 to 40 minutes. A demographic tool and a semi-structured interview guide with eight open-ended questions were used for information on study participants' perceptions of health, life, and living with daily limitations following the HF diagnosis. Participants were free to respond in either Urdu or English, depending on their ease and comfort speaking any of the languages. There were no gender constraints; participants of both genders between the ages of 35 and 75 years, with a medically diagnosed case of HF, and who could understand and communicate in either English or Urdu, were eligible for recruitment. Any participant with symptoms of HF such as shortness of breath, fatigue, or swelling of the ankles at the time of the first contact was excluded. Written consent for voluntary participation and audio recording was obtained, and confidentiality was maintained. The interview transcripts were translated and transcribed according to established methods, followed by an analysis of emerging themes.

The analysis process consisted of numerous conscientious steps to maintain integrity and depth of the findings. Creswell 2013 steps of analysis was used, employing the manual approach to ensure the in- depth engagement of the data, no use of software, while Lincoln and Guba (1985) criteria of trustworthiness were applied to enhance the rigor and reliability of the findings. Firstly, data was organized with great care and stored in a secure setting to maintain participant confidentiality. Several readings of the transcribed interviews ensured that there was a much nuanced understanding of participants' perspectives. Data coding attributed these key concepts, which were subsequently identified as themes. Rigorous procedures, such as regularly going through thesis committee reviews, upheld the trustworthiness of the analysis. Other measures that further strengthened the confirmability of the findings included member checks and confidentiality safeguards. Reflective notes reduced researcher bias; credibility and reliability checks on the obtained data were embedded. There were personal biases that needed to be recognized and reduced as the process went on. The transferability in this study might be limited only to similar settings, but the purposive sampling and detailed documentation increase the potential applicability. The ethical considerations to consider and protocols for obtaining participants' informed consent, preserving their confidentiality, and securing their data.

RESULTS

The sample size included 14 patients who fulfilled the inclusion criteria and consented to the individual interviews. These patients were under treatment for heart failure and were attending the out-patient Department of Cardiology, Aga Khan University Hospital, Karachi, Pakistan.

The demographic characteristics including mean age of the participants was 64.21 years. Among the participants, 42.9% (n=6) were male, and 57.1% (n=8) were female HF patients. The majority of the participants were married (78.6%, n=11), followed by

those who were single (7.1%, n=1) or widowed (14.3%, n=2). The average household income was 75,714 PKR. The participants' educational background included 28.6% of participants with intermediate education, and 42.9% retired. The Table 1 provides the summary of demographic data.

The content analysis from the participants' narratives led to the identification of multiple codes, which were then grouped into categories. These categories were further merged to form themes, providing a deeper understanding of the participants' experiences. The concept of HRQoL of HF patients was explored and the two main themes emerged from the study. The themes and categories that emerged are given in Figure 1

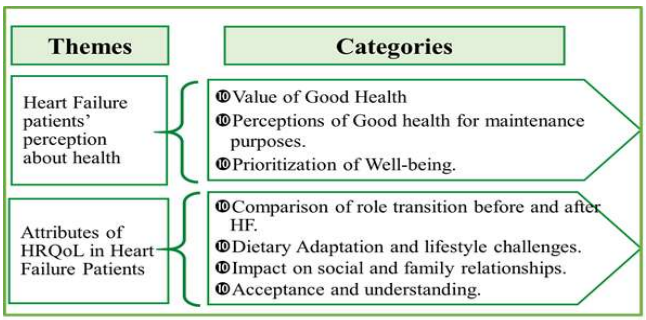

Fig 1: Themes and Categories

HF affects multiple domains of an individual's life; it was significant to explore the perspectives and significance of health after having HF. The three major categories under this theme are reflection and value of good health, perceptions about good health for maintenance, and prioritization of well-being (Figure 2)

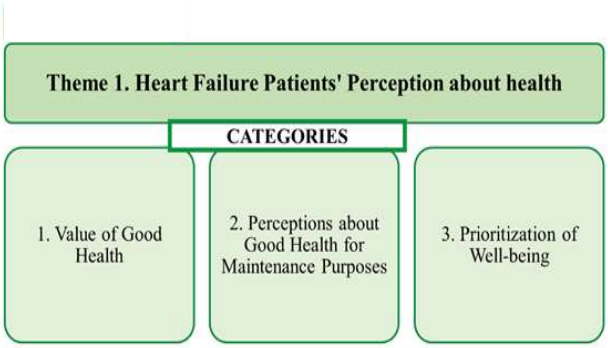

Fig 2: Theme One: HF Patients' Perception about Health

Participants had also begun to notice how their physical health was connected to their mental and emotional well-being. Realizing this connection, they realized that staying healthy had positive effects on their state of mind too. Participant recognizing the significance of good health acknowledged its unparalleled contribution to preserving and enhancing the very essence of life itself by stating,

Table 1

Demographic Variables Age (years)	**Number of Participants (n) Range 50-75**
Total Household Income (Rs)	Range 40,000-100,000
Gender	
Male	06
Female	08
Marital Status	
Married	11
Unmarried	01
Widowers	02
Occupation	
Housewife	04
Retired	06
Non-Working	03
Working	01
Level of Education	
No Formal Education	01
Primary Education	05
Secondary Education	01
Intermediate	04
Diploma/Degree	03
Religion	
Islam	13
Christianity	01
Type of Family	
Joint Family	09
Nuclear Family	05

"I have realized how important it is to stay healthy. It's like having a key to a happy life that you must take care of. My health feels like a special present, and it reminds me to be grateful and take good care of it. Seeing my health as a gift makes me thankful and determined to keep it safe". (HFP-03)

Some participants showed gratitude to Allah (God) for the blessings they had received after going through the disease process and how their health was improving after experiencing this challenge. As one of the participants shared,

"I am grateful to Allah (God) that I am alive. Whatever Allah (God) has granted us we have to accept it and modify our lifestyle to accept this challenge" (HFP-05).

Many participants acknowledged the value of life and chose to live it fully, cherishing each moment. As one participant stated, *"Every day is a chance for me to live a happy life" (HFP-11).*

Category: Perception about Good Health for Maintenance Purposes

Participants viewed their health as intertwined with the health of those around them, fostering a sense of responsibility to maintain it. While sharing their experiences, the participants showed their emotions through tears and grimaces.

"Being healthy is not just for me. It is for those I love too. Taking care of myself is like taking care of them" (HFP-01).

"After my HF diagnosis, I learned how important it is to make healthy choices. It is not just about me; I must stay well. I work hard to keep myself healthy because I want to feel better and be there for those I care about". (HFP-04)

Category: Prioritization of Well-Being

In this category, the participants showed that they cared about their health. They realized that taking care of themselves would help them follow their dreams, especially with regard to their kids.

One of them said, *"I focus on my health because it gives me the energy to chase my dreams, especially for my children. Going for check-ups regularly is important to me"(HFP-02).*

Participants also showed contentment and appreciation for the current situation, with a renewed perspective on life. As one of the participants shared, *"I had been given a second chance at life. It made me more grateful and motivated to care for myself, as health is the backbone of a fulfilling life" (HFP- 10).*

Theme Two: Attributes of HRQoL in HF

Individual perspectives regarding HRQoL and its holistic approach to their life after experiencing HF were explored. Every participant articulated a different opinion and a different viewpoint about their life in a different way, with mixed feelings (Figure 3)

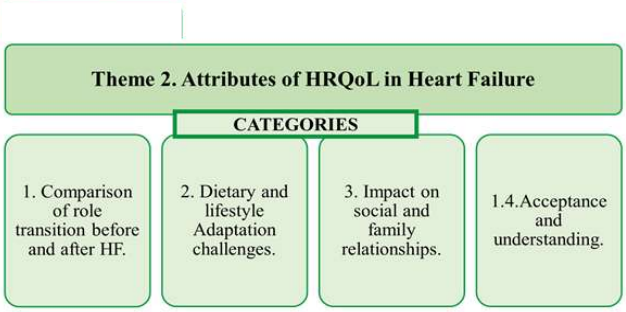

Fig 3: Atributes of HRQoL in Heart FailureF

Category: Comparing Role Tansition before and after HF

Many participants expressed feelings of frustration and sadness due to the limitations that HF had imposed on their physical abilities. One of the participants stated, *"HF has brought a lot of frustration and sadness. I feel limited in doing my household work, like cooking, and washing. It needs strength which I do not have. I experienced shortness of breath when I stand for a prolonged time" (HFP-01).*

Participants showed their frustrations with their social boundaries through their narrations. Stated, *"I cannot go anywhere, not meet anyone, and even not engage in social activities. I am stuck because of my illness"*

Female participants expressed their anxiety and fear related to their family. Participants stated, *"As women, we are the pillar of our family, we have to take care of ourselves. After HF, I always used to worry when I became sick because there was no one to take care of my family. Nobody was there for cooking cleaning, and my children, my husband also became worried about my health" (HFP-13).*

Category: Dietary Adaptation and Lifestyle Challenges

Participants adjusted their lifestyles and dietary habits in response to their health conditions and adapted to navigate their daily lives. This involved modifying eating habits, incorporating exercise routines, and embracing wellness practices to maintain a balanced and healthy way of living. One of the participants stated,

"I realized that I needed to make some changes to feel better. So, I started looking at what I eat and how I live. I began choosing foods that were good for me, even if they were not what I used to eat. And you know what? It's not just about food. I started doing exercises that my body could handle and finding ways to relax my mind. It is like I am adjusting my life to fit my health needs, and it's helping me feel better, overall" (HFP-05).

Category: Impact on Social and Family Relationship

The category of impact on social and family relationships highlighted how HF affected participants' interactions with their loved ones. The connection with families and friends after HF made them worried about their future and felt unsure about their purpose in life due to the illness. Participants verbalized that they were not as valuable as before. One of the participants stated,

"Well, since my heart became weak, I have been close to my family and friends. It is not easy. I worry a lot about what's next, you know? Sometimes I don't know what to do anymore, and sometimes I feel like I am not that important" (HFP-02).

Category: Acceptance and Understanding

Many participants described how close relationships had offered them solace and support. Indeed, many participants identified support from friends and family as quite invaluable, due to the boost it gave their confidence and strength. They shared how they overcome adversities, turn to others for emotional support, and live in the present moment toward becoming resilient.

"I used to stress about the future, but that only made things worse," one of them said. Now I focus on here and now, daily planning small pleasures. I ask for help from the people I love when I feel overwhelmed (HFP~06).

Analysis of this data provided insight into the complicated experiences of patients suffering from heart failure in Pakistan and problems related to maintaining health and wellbeing. The research directly used participant statements, therefore documenting real voices and experiences of people living with heart failure.

DISCUSSION

This study followed up the results on how patients' perceptions of their quality of life influenced the health of patients and had positive effects on QOL after HF. The primary goal of treatment for patients with heart failure is maintaining the physiological balance and the overall HRQoL of the patient with HF. This feeling of gratitude, culturally intrinsic in the Pakistani context and reinforced by religion, served as both a strong coping strategy and an emotional response. Participants expressed deepest gratitude for every day of life despite all the problems they were facing.

The findings are that the link between gratitude and well-being is partially mediated by social support and coping[7]. One of the major findings that came out of the research was the interrelation of physical health with mental and emotional well-being. This therefore implies that besides reducing the burden of disease, physical health improvements translate into activities that promote good mental and emotional conditions. In the similarly done study in Serbia, poor HRQoL in HF patients is reported as independently related with a higher possibility of cardiac mortality and HF linked readmissions[8].

The emergent code "the meaning of health" showed that despite their discontent with the restrictions imposed on them by their illness, patients participated actively in their conditions. Meaningfully[9], showed that such experiences resulted in a higher growth rate and sublimity amidst lifestyle restriction.

The importance of health, therefore, went beyond the individual to the collective, reinforcing the thinking that 'health is a collective responsibility'. Beyond believing good health to be a blessing, participants strongly reiterated it as the top priority. Moreover, the research findings emphasized the importance of timely intervention in order to avoid delay in treatment and subsequent complications and dependency. One of the studies replicates the findings and shows that health dimensions were perceived to influence each other; and physical and mental health dimensions were chosen as the most relevant items[10]. This sense of responsibility and seriousness manifested in their consistent adherence to regular doctor visits, prescribed medications, and avoidance of non-prescription drugs. These findings align with a cohort study conducted in the USA, which underscored the importance of self-care maintenance activities, such as medication adherence and dietary sodium restriction, in managing HF[11].

In Pakistani context, participants certainly exhibited a strong commitment to improving their daily routines, highlighting a holistic approach to well-being. They displayed resilience in the face of challenging HF symptoms, which catalyzed positive lifestyle changes. However, no particular study was found that talked about the holistic approach being affected, but a descriptive cross-sectional study found that sleep problems were the most burdensome symptom, and they were linked to lower HRQoL, along with worse functional status and reduced overall symptom burden[12]. The present also revealed a sense of contentment and appreciation for the current situation, accompanied by a renewed perspective on life. These findings match those from a study conducted in South Asia, which emphasized the role of personal connections, including those with healthcare providers, family, and spirituality, in shaping self-management approaches and reflecting individuals' desires to maintain balance and autonomy in managing their chronic conditions[13].

The analysis also showed the broader advantages of proactive health habits that extend beyond physical well-being but hold particular relevance within the context of Pakistan where the cultural and societal aspects play a significant role in overall well-being. Such proactive habits can empower individuals to lead healthier, more fulfilling lives, fostering a sense of control, confidence, and energy, ultimately improving

their overall quality of life. Further, the analysis showed that these practices exerted a positive influence on the mental and emotional states of HF patients, ultimately contributing to an enhancement in their overall quality of life. These outcomes resonate with a prospective interventional study conducted in Pakistan, which highlighted a robust connection between physical functioning and HRQoL, thereby reinforcing the essential role of physical health in safeguarding the quality of life among individuals grappling with HF[14].

One component emerged from this study is HF patients experienced anger and frustration, as they were not able to cope up with their daily life activities due to physical limitations and their dietary restriction which bring the need for patient centered approach. One study also emphasized on the physical health which has a directly impact on the HRQoL[14]. Along with this, dependency on family members also arise due to limitations Moreover, HF patients also struggle with their daily life restriction and also some of them are in the phase of adaptation by prioritizing and coping with their restrictions. A similar study showed that the modification in their daily activities is one of the aspects of adaptation process[15]. The financial burden can one of the emerging concept come from the participants due to HF. A similar study revealed that the role disruption and not contributing towards finance can increase the burden and reduce self-esteem[16]. Sense of support from family members and spouse is one of the crucial concept arising from this study as this contributes to overall well-being of an individual and strengthens their spirituality and find solace. By identifying the significance of support systems holistic approach to manage the care can be determined.

CONCLUSION

The qualitative study thus embarks on an important quest for HRQoL in patients with HF in Karachi, Pakistan. It focuses mainly on the perceptions and experiences of HF patients attending outpatient clinics, giving insight that is critical to their health and well-being status. It explores perceptions and experiences of patients with heart failure attending outpatient clinics, which reveals some important insight into their health and wellbeing. To the best of our knowledge, this is the first qualitative study conducted in Pakistan to explore the concept of HRQoL among HF patients. The overall contribution of this study is to deepen the understanding of the challenges HF patients in Pakistan face and to underline the necessity and importance of patient-centered care in improving their quality of life. It points out a highly relevant perspective for any comprehensive and culturally sensitive management of HF in Pakistan. Not only do they recognize the financial burden and emotional toll on families, but they also offer support for patients in their changing roles and address issues related to daily life. By addressing these challenges can improve the HRQol of patients.

RECOMMENDATIONS

This study has some strength, like innovativeness in the setting of Pakistan; it laid a foundation for the evaluation of HRQoL among HF patients. Other than addressing challenges within role shifts and lifestyle changes, the study points to values like family support, thankfulness, and good health. The research does have several limitations: it focuses on only one clinical setting and thus has limited generalizability of the results to different patient populations or health care settings.

Based on the findings, the study offers several recommendations for clinical practice, nursing education, and future research. It advocates for holistic assessments of HF patients, the integration of psychosocial support, and enhanced collaboration among healthcare professionals. Additionally, it calls for further research to explore the sexuality domain and to implement randomized controlled trials to evaluate nursing interventions.

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ORIGINAL ARTICLE

Beta Thalassemia: A Family Affair - Exploring the Interplay Between Disease Awareness, Parental Stress, Child Well-being and Quality of Life in Karachi, Pakistan

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ABSTRACT

Objective: To assess the general public's level of disease awareness and understanding, as well as its impact on various elements of life.
Methodology: This is a cross-sectional study. Total sample size was 275. Study duration was September 2020 –February 2021. Inclusion criteria was all men and women, either married or unmarried, above the age of 18 years, who did not work in healthcare sector and lived in Karachi, Pakistan. A standardized questionnaire was created using Google Forms, and data was collected online. In addition, a consent form was appended to the questionnaire. The study was given approval by the institute'sÊethicalÊreview committee. The data was analyzed using SPSS version 25. Chi square test was used for data comparison. A p-value of <0.05 was considered statistically significant.
Results: Out of the total study population, 81.7% were married and 17.3% were unmarried. The majority (51.4%) were aged 18 to 22 years. A significant association was found between knowledge and quality of life (p-value; 0.018), between the role of consanguineous marriages and disease etiology (p-value; 0.014), between the number of units of blood transfused to the thalassemic patient in one sitting and its effect on quality of life (p-value; 0.006), and between knowledge and the number of hospital visits for blood transfusion (p-value; 0.031).
Conclusion: The study indicated that our sample group lacked sufficient awareness regarding thalassemia and its impact on quality of life for both the patient and the family.

Keywords: Beta-thalassemia major, consanguineous marriages, disease awareness, quality of life.

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INTRODUCTION

Mediterranean, Southeast Asia, Africa, and the Middle East are the regions where thalassemia is most prevalent[1]. Around 4 children worldwide are affected by thalassemia for every 100,000 live births, and 7% of the world's population is a carrier of this illness[2]. Between 50,000 and 100,000 children in third-world nations die from thalassemia major each year[3]. An estimated 9000 babies in Pakistan are born with beta thalassemia each year[4,5]. In the entire population, there are 9.8 million carriers, or an estimated 5-7% carrier rate[5]. If we break down the figures, it means that in an average group of 100 Pakistani citizens, five are disease carriers. The cultural and religious scenario of Pakistan is such that consanguineous marriages are quite common[6]. There is lack of widespread awareness of premarital screening and counseling of individuals with a family history of the disease[7]. Furthermore antenatal diagnoses is not widely available. The concept of termination of pregnancy is an ethical and religious issue in the community[8,9]. With these state of affairs, thalassemia is best treated conservatively with all its inherent complications, eventually resulting in debility.

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Thalassemia can lead to physical deformity, growth retardation and delayed puberty[10-12]. Its effect on physical appearance adds to the child's negative self-perception. Due to frequent hospital visits and laboratory testing, families of thalassemic patients are more likely to have behavioral issues. Parents frequently bear an excessive financial load as a result of the intricate and ongoing treatment process. All things considered, thalassemia presents financial, emotional, cognitive, and physical challenges for the sufferer and their family. Inadequate treatment, a lack of psychosocial support, and the absence of public screening programs, all contribute to an increase in the burden of disease[13,14]. Community wide education programs can dramatically increase the population awareness regarding the disease. Understanding the factors that contribute to patients' and their families' quality of life is essential for improving it[15,16]. In order to fill in the knowledge gaps, this study focuses on a less studied area, namely the relationship between emotion and illness. Moreover, we will assess public awareness of thalassemic patients and the variables affecting their health-related quality of life. All of this knowledge will assist us in determining whether the psychological health of the parent affects the quality of life of the child. It might open the door to understanding the area that requires attention in order to improve the outcome of the disease.

METHODOLOGY

IRB/ERC Approval:

The research was conducted using an online, structured, closed-ended questionnaire created with Google Forms, approved by the Institutional Review Board of the Bahria University Health Sciences Campus, Karachi Ref. No. RUHS-IRB # 099/24.

Duration of the study was six months from September 2020-February 2021.The sample size calculation was carried out by statistical software StatCalc sample size calculator tool with 95% confidence level and 5% margin of error. The calculated sample size of the study was 275. Total number of responses received was 301 and finally the valid number of responses among these was 275. Random sampling technique was applied and each respondent was given equal chance of selection. All residents of Karachi, male or female, married or unmarried, above the age of 18 years were included in research and those belonging to any health-care service, and those who did not give consent were excluded from the study. Data was collected using an online questionnaire form, the link of which was distributed amongst non-medical students residing in Karachi, Pakistan to increase the diversity of the sample. A structured, standardized questionnaire was designed using Google Forms. The questionnaire consisted of 22 questions. A consent form was attached before the questionnaire. Each participant was instructed to select the option that best suits their opinions to analyze the level of perception about various factors amongst the participants. Confidentiality of respondents was maintained. This study was impartial and independent. Data analysis was performed using Excel spread sheet along with Statistical Package for Social Science (SPSS) version 25.0 to analyze the data obtained via our response forms. Using this data, the responses were also analyzed into percentages and frequencies using SPSS descriptive tool. A p-value of less than 0.05 was considered statistically significant in all cases. During data analysis total of 24 variables were merged into 7 variables altogether (daily activities, socializing, attitude towards patient, parents mental health, effect on siblings, family gatherings and blood arrangement) to form a new variable which was then labelled as “quality of life (QoL)” in thalassemic children and their families. Five variables (relationship, premarital screening, prenatal screening, termination of pregnancy, costs) were merged to form a new variable which was labelled as “knowledge (Klg) among the participants” of our study. Disparity between categorical variables was checked using Chi square test whereas descriptive statistics were used to report frequencies and proportions for categorical responses. The categorical variables used in this research were age, marital status, consanguineous marriages and relationship.

RESULTS

Basic characteristics: A total of 275 persons were selected and 100% consented to participate in the study, therefore the response rate was also 100%. Confidence level was set at 95%. None of the response forms were excluded from the study as no missing data was found. This was solely since it was made mandatory for the participant to answer all the questions prior to its submission. During data analysis a few changes were made, out of a sum total of 24 variables we merged seven variables altogether (daily activities, socializing, attitude towards patient, parents mental health, effect on siblings, family gatherings and blood arrangement) to form a new variable which was then labelled as “quality of life (QoL)” in thalassemic children and their families. Five variables (relationship, premarital screening, prenatal screening, termination of pregnancy, costs) were merged to form a new variable which was labelled as “knowledge (Klg) among the participants” of our study.

Demographics:

Table-1 shows the socio-demographic characteristics

of our sample population. Our data indicated, out of the total 275 study population, the majority (51.4%) were in the 18 to 22 year age group. The mean age of our participants was 24±2.75 years; with ages ranging from 18-30 years. Furthermore, when inquired about the relationship status of the participants, responses indicated that 81.7% (n=227) of the total participants (n=275) were married and 17.3% (n=48) were unmarried. However, no significant association was found between the socio-demographic data (age, marital status) and the overall knowledge among the participants.

Spread of thalassemia and hospital related variables:

Table-2 shows that the factors related to the spread of thalassemia were covered using three variables namely "etiology", "transmission" and "role of consanguineous marriages" in spread of disease. When asked about the etiology of beta-thalassemia, majority of the participants (64.4%: n= 179/275) already knew that thalassemia is a genetic disease, passed down from parents to their offspring; these numbers were followed by a total number of 34 participants who considered thalassemia an infectious disease.However; a total number of 62 participants (22.3%) considered thalassemia to be a non-infectious or metabolic disease. Less than half of the total number of the participants (48.9% n=136/275) knew about the role of consanguineous marriages in the spread of thalassemia. 139/275 respondents did not believe cousin/consanguineous marriages to be an important factor in the spread of thalassemia.

Moreover, Table-2 shows that a significant association was found between the role of consanguineous marriages in the spread of thalassemia and etiology of the disease (p-value 0.014). However, no significant association was found between 'knowledge" and role of "consanguineous marriages" in the spread of thalassemia.

Upon analyzing the data to assess the knowledge of the participants regarding the transmission of thalassemia, we found that more than half our sample (58.7%) believed the disease is genetic, followed by 63 respondents who believed its transmission is due to blood transfusions, whereas only 7.6% of the sample opted for the "other" option. Additionally, as showed in table-3 our data indicated that 113 out of 275 respondents were clueless about the no of bottles a thalassemic child receives in one sitting, however 60 participants were certain that one bottle/sitting, whereas approximately 84 participants opted for two bottles/sitting. A significant association (p- value; 0.006) was found between the units of blood transfused to the thalassemic patient in one sitting and its effect on (Qol) quality of life which comprises of 7 variables merged together (daily activities, socializing, attitude towards patient, parents mental health, effect on siblings, family gatherings and blood arrangement). Our analysis indicated that the 42, 149 and 84 respondents of our study thought that a thalassemic child has to visit the hospital daily, weekly and monthly respectively.

More than half of our participants (69.1%) did not know about the importance of premarital and prenatal genetic counseling in high risk families which is used as a method of prevention against the disease, while only 83/275 respondents considered genetic counselling as preventable measure against the disease. A higher proportion of participants (54%) considered blood transfusion as the only treatment option available for the thalassemic children whereas only a small percent (23.4%) of the sample already knew that bone marrow transplantation, which if done timely can permanently cure thalassemia and therefore produce better results.

Knowledge:

Knowledge regarding beta-thalassemia major among the participants of our study was evaluated based on a mean score of 5 variables. The unknown part of the information amongst our study population was mainly the poor knowledge regarding the availability of diagnostic tests.

1. Premarital screening: (Mean: 0.77, SD = 0.419) - more than half i.e. 76.6% of the sample not knowing about premarital screening.

2. Prenatal screening: (Mean: 0.77, SD = 0.423) - 75.9% of the respondents were completely clueless about the availability of prenatal diagnostic tests for potential carriers of the disease.

3. Termination of Pregnancy: (Mean: 0.77, SD = 419) - an overwhelming majority (76.6%) of participants were against the termination of pregnancy in case of a positive screening test result. Amongst which a total of 213 participants would not terminate pregnancy at any cost whereas 62 respondents would opt for termination of pregnancy based on a positive screening test result; which amounts to only 22.3% of the entire sample size.

4. Cost awareness: (Mean; 0.71, SD = 0.455) - when questioned about the cost of a single blood transfusion which is used to manage the disease; we found that only on 80 respondents were aware out of a total sample of 275. Surprisingly enough, 70.1% of our participants were unaware of the fact and were clueless as to how much a single blood transfusion would generally cost a thalassemic patient in Karachi, Pakistan.

5. Family history of disease: (Mean: 0.52, SD = 0.501) - family history was positive in 132 participants whereas a total of 143 which amounts to more than half of our

sample size mentioned that they've never had an interaction or a close relationship with a thalassemic child before.

Table-3 shows a significant association (p value 0.018) between the "knowledge" which comprised of 5 variables merged altogether (relationship, premarital screening, prenatal screening, termination of pregnancy, costs) and quality of life (QoL) consisting of 7 variables merged together (daily activities, socializing, attitude towards patient, parent's mental health, effect on siblings, family gatherings and blood arrangement).

Table 1: Demographic Characteristics, Spread and Treatment Related Variables

Variables	Frequency (N = 275)	Percent (%)
Age (in years)		
18-22	143	51.4
23-26	95	34.2
27 & above	37	13.3
Mean Age (S. Dev)	24 ± 2.75 years	
Marital Status		
Married	227	81.7
Un-Married	48	17.3
Etiology		
Infectious Disease	34	12.2
Non-Infectious Disease or Metabolic Disease	62	22.3
Hereditary Disease	179	64.4
Transmission		
Blood Transfusion	63	22.7
Parents to offspring	191	68.7
Others	21	7.6
Role of Consanguineous Marriages		
Yes	136	48.9
No, Maybe, Not sure	139	50
Hospital Visits		
Daily	42	15.1
Weekly	149	53.6
1-12 Months	84	30.2
Bottles of blood/ transfusion		
1 bottle	60	21.6
2 bottles	84	30.2
> 3 bottles	18	6.5
Not sure	113	40.6
Genetic Counselling		
Yes	83	29.9
No, Maybe	192	69.1

Table 2: Cross Tabulation of Knowledge of Participants, Etiology and the Role of Consanguineous Marriages in Spread of Thalassemia

Consanguineous Marriages	Yes	No, Maybe, Not sure	p-value
Knowledge of Participants			
Below Average	28	17	0.06
Average	26	40	
Above Average	82	82	
Etiology			
Infectious Disease	12	22	0.14
Non-Infectious Disease or Metabolic Disease	24	38	
Hereditary Disease	100	79	

*= significant p value

Table 3: Cross Tabulation of Bottles of Blood/ Transfusion, Knowledge of Participants and Overall Quality of Life Among Thalassemic Children

Quality of Life	Poor	Satisfactory	Good	p-value
Bottles of blood/ transfusion				
1 bottle	11	28	21	0.006*
2 bottles	28	18	38	
> 3 bottles	6	3	9	
None	26	51	36	
Knowledge of Participants				
Below Average	19	12	40	0.018*
Average	8	29	63	
Above Average	18	25	61	

*= significant p value

DISCUSSION

Beta-thalassemia affects not only the patient but also poses as a challenging task for the parents, therefore this study was aimed to assess the level of knowledge among the participants and the quality of life as perceived by thalassemic child and his/her family.

Only 37 individuals in our study were older than 27 years, with the majority of participants (51.4%) falling into the 18 - 22year age range. This was in line with findings from a study conducted in Malaysia, where 53% of participants were in the 18–20 age bracket.[16] The large proportion of youthful responders can be explained by their greater familiarity with software management and their quicker access to the internet. Married respondents outnumbered single respondents (81.7%) in this study, this is due to the high cultural

preference for early marriage found in South Asian households. Another study conducted in Pakistan, revealed the percentage of married participants to be 71%[17].

While most survey participants were aware of the disease's origin, they were largely ignorant of how thalassemia is transmitted. Most participants (64.4%) in our study agreed that genetics has a role in the disease's spread. This greater figure is the result of awareness initiatives in larger cities and easier access to social media platforms. This is in contrast to another study where a greater proportion of participants (60%) were not aware that thalassemia has a hereditary component[18]. As in another study done in Malaysia, a smaller percentage of participants in our survey believed that thalassemia is a metabolic or non-infectious condition[19].

In our survey, nearly half of the participants agreed that consanguineous marriages are a significant factor in the disease's spread. This is related to the part that culture plays in our day-to-day routine. Individuals typically want to marry within their family. People continue to be unaware of scientific research that strongly highlight the positive role consanguinity plays in the inheritance of thalassemia and hold the belief that human intervention plays no part in the transmission of disease. Government legislation can improve these figures. Similar results were obtained in another investigation that was carried out in India[20]. Our study showed that a relatively large number of participants were not sure about the amount of blood transfused to a thalassemic patient. Although one third of the participants agreed that 2 bottles of blood must be transfused in one sitting to a thalassemic patient. This is in accordance with the fact that they were not related to medical profession, so such precise response could not be expected. This highlights the need to emphasize on directing the attention of general public to such details. This might increase the number of voluntary blood donors in the community.

We also made an effort to assess the participants' thalassemia knowledge. We enquired about the disease's diagnostic procedures. A sizable portion (76%) were unaware regarding the pre-marital and prenatal testing. According to the participants' responses, they didn't know much about the disease's prognosis or course of therapy. Screening is believed to be impacted by a lack of medical awareness and a fear of stigma if one tests positive. Slightly more than half of participants knew that beta-thalassemia major affects daily routine activities of the patient. This is because large number of the participants were educated and knew well about the hindrances caused by this disease. Approximately 52% of participants agreed that thalassemic patient finds it difficult to interact and socialize with other people. This is similar to another study where majority of participants agreed that thalassemic patients might find it difficult to attain marital status. Throughout this investigation, three new findings were noted. First, 53.3% of the general public were found to be aware of how frequently a hospital visit may be required for a blood transfusion. Second, 52.2% of people did not know that arranging blood for a thalassemic child who has received multiple transfusions can be complicated and time-consuming. Finally, 40% of participants were unaware of how many blood bottles are required for each anemic episode.

CONCLUSION

There is a need for holistic management of thalassemia incorporating education, emotional, and physical rehabilitation. Premarital and prenatal screening policies should be introduced in Pakistan.

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CASE REPORT

Prosthodontic Management of a Patient with Ectodermal Dysplasia— A Clinical Report

Rumaisa Shahid[1], Afsa Mujahid[1], Samina Kanwal[1], Ahsan Inayat[2], and Muneeb Ahmed Lone[1]

ABSTRACT

Ectodermal Dysplasia is a congenital, diffuse and non-progressive disorder characterized by hypoplasia or aplasia of structures derived from the ectoderm germ layer. Ectodermal dysplasia has three different inheriting patterns with X-linked inheritance being the most common. It is classified into Hypohydrotic and hydrotic based on the condition of sweat glands. Clinical manifestations of this disorder include hypodontia, anodontia, soft and thin enamel, delayed eruption, xerostomia, alveolar ridge atrophy, flat nasal bridge, decreased or no sweat glands, frontal bossing, sunken cheeks, loss of hair, and thin and abnormally shaped nails. Globally, the cases of ectodermal dysplasia are rare, having a prevalence of 1:100,000 with only a few documented and reported in Pakistan. This report presents a female patient, aged 16 years, who came to the OPD with the main complaint of missing teeth. Provisional diagnosis of Ectodermal Dysplasia was made based on examination and history. It aims to contribute to the improvement of treatment planning, promoting documentation and early diagnosis in Pakistan.

Keywords: Complete denture, congenital, ectodermal dysplasia, ectoderm germ layer, hypodontia, prosthetic rehabilitation

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INTRODUCTION

Ectodermal Dysplasia, a genetic disorder, affects structures derived from the ectoderm germ layer. It is characterized by hypoplasia, aplasia and dystrophy of ectodermally derived structures including hair, nails, teeth, salivary, lacrimal, and sweat gland[1]. It is a congenital, diffuse, and non-progressive disorder[2]. Ectodermal Dysplasia has three different inheriting patterns, X-linked, autosomal recessive, and autosomal dominant[3]. The most common inheriting pattern is X-linked therefore, male predominance is seen.

Based on the state of sweat glands, Ectodermal Dysplasia can be classified into Hypohydrotic and Hydrotic. The Hydrotic type has normal sweat glands and is more prevalent. Hypohydrotic or Anhydrotic type has either no sweat glands or reduced in number. Oral manifestations include delayed teeth eruption, conical-shaped teeth, alveolar ridge atrophy, protuberant lips, high palatal arch, etc. These cases are rare with an incidence of 1:100,000[4].

Literature review, done through pubmed and google scholar, found that very few cases of ectodermal dysplasia have been recorded in Pakistan. This might be due to lack of awareness and diagnostic tools. Promoting the documentation of such cases can improve patient care and may lead to early diagnosis, enhancing the treatment plan. Prosthetic rehabilitation is the most commonly considered rehabilitation option for such patients. It includes complete dentures, removable dentures, implant-supported prostheses, and other tooth-supported dentures. Fixed prosthetic treatment options are usually considered but in our case, patient did not have sufficient bone to support an implant and was unwilling to go for procedures like bone grafting. This case report features prosthetic rehabilitation of a patient with ectodermal dysplasia by overdentures.

CLINICAL REPORT

A 16-years old female patient reported to the department of Prosthodontics at the Dr Ishrat-ul-Ebad Khan Institute of Oral Health Sciences (DIKIOHS), DUHS with the

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Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5


Fig. 6


Fig. 7


Fig. 8

chief complaint of difficulty in chewing. Extra-oral examination revealed mandibular prognathism and class III skeletal profile along with thin upper lip, depressed cheeks and increased lower face height (Figures 1, 2, and 4).

Intra-oral examination revealed one malformed upper right lateral incisor and a conical shaped upper right canine in the second quadrant with thin mucosa and knife edged residual ridge in maxillary and mandibular arches. General examination revealed lean body structure, low body weight, thin and sparse hair on head and eyebrows.

Considering these findings, a diagnosis of Ectodermal Dysplasia was made. Medical and family history were non-contributory.

Radiographic examination revealed presence of only two teeth (an upper right lateral incisor and a canine) in the second quadrant (Figure 3). No impacted teeth or no other anomalies were found. Treatment options included teeth supported complete overdenture and removable partial denture. Since the alveolar bone was highly resorbed, placement of implants was not possible and the only two malformed teeth were also not suitable as abutments for a removable partial denture. Considering all the factors, a decision was made to provide tooth retained overdentures to the patient. Root canal treatment was performed on the teeth and they were shaped accordingly to be used as abutments for overdentures (Figure 5).

After abutment preparation, impressions were made for fabrication of complete dentures. Primary impression was made by using tissue friendly material (Irreversible hydrocolloid). Secondary impression was recorded using green stick impression compound and impression paste. Jaw registration was done and records were taken to restore lower facial height. Teeth setup was done using semi-anatomic teeth with bilateral balanced occlusion. Teeth were set in cross bite to compensate for arch discrepancy. After processing in the dental lab, complete overdentures were made using heat cure acrylic. Final dentures were inserted and adjustments were made according to the patient (Figure 6, 7 and 8). Since the patient had never had a denture before, she was explained about all the hygiene measure, maintaining periodontal health and denture cleaning protocols. Follow up visit for fluoride applications were also planned.

DISCUSSION

Ectodermal Dysplasia is a congenital disorder that affects ectodermally derived tissues during embryological phases of development. It has different inheriting patterns with X-linked being the most common, therefore it is more common in men with females being carriers. There are two types of ectodermal dysplasia: Hypohydrotic and Hydrotic. Hypohydrotic ectodermal dysplasia (HED) is also known as Chris-Siemen-Tauriane Syndrome[5]. HED is characterized by a triad of symptoms hypotrichosis (sparse hair), hypodontia or anodontia, and inability to sweat or decreased sweating with an X linked inheritance pattern. However, the other type i.e. the hydrotic type is inherited as autosomal dominant (Clouston's syndrome)[2,6].

A report by Chandravanshi stated that mutations in EDA, DARADD, and EDAR genes are responsible for causing HED. These genes mainly code the protein which is responsible for the interaction between the ectoderm and the mesoderm germ layer[5]. Another case

report on Ectodermal Dysplasia states that although the cause of it is still unknown, it is assumed that it may manifest as mutations in thrombospondin-type laminin G domain and epilepsy-associated repeats (TSPEAR) gene affecting hair and tooth development. However, further evaluation is needed on this[7].

Clinical manifestations include flat nasal bridge, everted lips, decreased or no sweat glands, generalized dryness and rash on the skin, frontal bossing, sunken cheeks, low set ears, loss of hair, sparse hair, thin and abnormally shaped nails, and other symptoms may vary depending on the patient's conditions. On the other hand, oral manifestations include hypodontia, anodontia, peg shaped teeth, soft, thin or pitted enamel, delayed eruption, dry oral mucosa, xerostomia which may lead to inadequate oral hygiene conditions, alveolar ridge atrophy, class III malocclusion, upward and forward displacement of cheeks[8,9]. Hypodontia is the most common manifestation in patients with ectodermal dysplasia[3].

Early diagnosis and oral rehabilitation are essential. It helps to reduce unwanted effects caused by the oral manifestations of ectodermal dysplasia. The main goal of the rehabilitation plan is to improve phonetics, aesthetics, occlusion, and mastication, and it also helps patients with self-confidence, while other conditions can be handled with palliative treatment. Xerostomia, which is a feature of hypohydrotic ED, and decreased lacrimation can be relieved by artificial saliva and tears, respectively[10]. The most common treatment considerations are removable partial dentures, implant-supported dentures, complete dentures, bridges and other prosthetic options depending on the manifestations that the patient has.

According to a report, the most acceptable treatment option available for children with hypodontia/anodontia is a removable complete or partial denture[11]. According to another report, the recommended age for early prosthetic treatment is from 5 years, while implant-supported dentures are recommended at the ages of 12 to 15 years keeping in consideration the degree of alveolar bone atrophy[12]. In such patients, denture fabrication must be done to obtain a proper distribution of occlusal loads. In the case of retentive support, the anterior conical teeth might be of little use hence they can be considered as abutments in case of overdentures[4]. Al Nuaimi R et al mentioned that overdentures have also proved to be a great option for rehabilitation purpose but the only drawback is it requires aggressive and complicated procedure for tooth preparation[11]. Removable partial dentures also have some limitations. They are highly considerable but they are short-term rehabilitation options. Severe alveolar ridge atrophy and plaque deposition on teeth might also be the limiting factors[13].

In this case study, we used the treatment options most financially suitable to the patient. The patient opted for tooth supported complete overdenture. The implants could not be placed because of reduced alveolar bone and the unsuitability of the two existing malformed teeth to act as abutments for removable partial denture. To facilitate this, elective root canal treatment was performed on the remaining teeth, and they were shaped to serve as stable abutments for overdenture. This comprehensive plan aimed to address the patient's specific conditions and provide a functional and supportive solution.

CONCLUSION

This report presents a unique case of oligodontia. The patient presented with the complaint of missing teeth in the oral cavity with only a lateral incisor and canine in the second quadrant. Diagnosis of ectodermal dysplasia was made. The treatment plan included teeth retained complete overdentures and lateral incisors and canines were used as abutments.

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