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Article

Quality of Life before & after Genitourinary Fistula Repair – Insights from WHOQOL-BREF

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ABSTRACT: **Objective:** We aim to assess the quality of life for women with genitourinary fistulas before and after surgery, utilizing the WHOQOL-BREF questionnaire to contrast the preoperative and postoperative results. **Materials and Methods:** This quasi-experimental study was conducted at the Department of Urology, SIUT, Karachi, Pakistan, from January to December 2023. We used the WHOQOL-BREF questionnaire to assess the quality of life. Participants completed the questionnaire both before the surgical intervention and three months after successful fistula repair. The collected data were entered and analysed using IBM SPSS v26, with a significance level set at $p \leq 0.05$. **Results:** The participants had a mean age of 35.50 years, with a standard deviation of 8.87 years. Before undergoing genitourinary fistula repair, the average WHOQOL-BREF score was 12.17 with a standard deviation of 5.77. Following the repair, the mean score showed a significant improvement, rising to 96.67 with a standard deviation of 11.86. This marked improvement was statistically significant, with a p-value of 0.0001. **Conclusions:** This study concludes that genitourinary fistula repair at our tertiary care hospital significantly and positively impacts patients' quality of life. The findings emphasise the critical role of timely and appropriate surgical intervention in improving overall well-being. Continued comprehensive care and support are vital for these patients' holistic recovery and long-term health.

KEYWORDS: genitourinary fistulae; vesico-vaginal fistulae; ureterovaginal fistulae; uterovaginal fistulae; O'Connor repair; robotic assisted VVF repair; Transvaginal repair; WHOQOL- BREF

INTRODUCTION

Genitourinary fistula (GUF) is a prevalent issue in our region, primarily involving vesicovaginal and ureterovaginal fistulas, while other types are less common. In developing countries, GUF is one of the most distressing complications for women, marked by persistent odour and uncontrolled urine leakage [1]. This devastating condition severely impacts both the physical and psychological health of affected women. While advanced obstetric care has made these fistulas rare in the industrialised world, they continue to afflict women in developing countries.

The World Health Organisation (WHO) estimates that over 130,000 new cases of obstetric genitourinary fistula occur annually, with approximately 2 million women currently living with untreated fistulas in Asia and sub-Saharan Africa [2]. Additionally, another study indicates an annual incidence ranging from 50,000 to 100,000 new cases, with over 3 million women estimated to have unrepaired fistulas [3].

Genitourinary fistula continues to be a challenging condition with severe consequences for patients in developing countries. In these regions, approximately 90% of fistulas are the result of neglected and obstructed labor [4]. Conversely, in developed countries, the majority of these fistulas arise as complications from surgical procedures or radiation therapy for cancer [5].

Health-Related Quality of Life (HRQoL), a multidimensional concept reflecting patients' perceptions of the effects of disease and treatment on their physical, psychological, and social functioning, is essential for evaluating healthcare interventions [5, 6]. A study by Matiwos et al. in 2021 reported a mean QOL score of 37.52 ± 10.99 [7]. Another study conducted by Singh et al. in 2015

found preoperative and postoperative QOL scores to be 8.25 ± 2.67 and 93.25 ± 7.20 , respectively [8]. Debela et al. reported an overall quality of life score of 58.17 ± 7.2 before surgical repair, which improved to 71.20 ± 10.79 post-surgery [9].

Obstetric fistula imposes significant physical, psychological, social, and economic burdens on affected women [10]. The condition frequently results in persistent incontinence, and the baby typically does not survive due to prolonged obstructed labour [11]. Beyond its devastating impact on physical health, obstetric fistula profoundly affects women emotionally and socially, leading to substantial psychological distress [12]. Additionally, it contributes to severe sociocultural stigmatisation.

This study aims to compare the quality of life before and after genitourinary fistula repair using the WHOQOL-BREF questionnaire. A thorough review of databases, including PubMed, PakMedinet, Google Scholar, Medscape, Web of Science, Scopus, and the Cochrane Library, revealed no existing studies at the regional or national level that specifically examine the pre- and post-operative WHOQOL-BREF scores to assess statistical differences. Conducting this study is essential for enhancing early diagnosis, preventing complications, and optimising patient care. The findings are expected to contribute to improved quality of life and reduced morbidity among these patients.

MATERIAL AND METHODS:

This quasi-experimental study was conducted at the Department of Urology, SIUT, Karachi, Pakistan, from January 2023 to December 2023, following approval from the institutional ethics review committee (SIUT-ERC-2022/A-424). All female patients presenting to the functional urology clinic with complaints of continuous urinary leakage per vagina were thoroughly evaluated. The evaluation included a detailed clinical history, physical examination, baseline laboratory tests, ultrasound of the kidneys, ureters, and bladder (KUB), CT urogram with cystogram, and examination under anaesthesia (EUA), which comprised inspection, cystoscopy, vaginoscopy, and, in cases where ureterovaginal fistula was suspected, retrograde pyelography to assess the upper urinary tract. Patients diagnosed with vesicovaginal fistulas (VVF) secondary to gynaecological and obstetric procedures or trauma were included in this study after obtaining informed written consent for participation using a non-probability consecutive sampling technique. Patients diagnosed with ureterovaginal fistulas (UVF), vesicouterine fistulas (VUF), or VVF secondary to malignant disease or radiation therapy were excluded from the study.

The sample size was determined using the Open-Epi sample size calculator, based on the pre- and post-operative mean WHOQOL-BREF scores (8.25 ± 2.67 and 93.25 ± 7.20), with a confidence level (C.I) of 95% and a test power ($1-\beta$) of 80%.

Each patient who consented to participate in the study was asked to complete the World Health Organisation Quality of Life-BREF (WHOQOL-BREF) questionnaire, a 26-item instrument encompassing four domains: physical health (7 items), psychological health (6 items), social relationships (3 items), and environmental health (8 items). It also included sections on overall quality of life and general health. The mean score for each domain was calculated by averaging the transformed scores, which were converted to a 0–100 scale for each domain.

All patients were admitted to the ward at least one day prior to surgery for anaesthesia and cardiac evaluation. The reconstructive surgery team performed all procedures under general anaesthesia, which included an examination under anaesthesia and bilateral ureteric retheterization. The surgical approach, whether transvaginal or transabdominal, for vesicovaginal fistula (VVF) repair was determined based on the findings from the examination under anaesthesia. Postoperatively, patients remained admitted for at least five days. Prophylactic broad-spectrum antibiotics were administered at the time of induction. After the removal of the drain, patients were discharged on the fifth day with an indwelling Foley catheter and a prescription for anticholinergic medication.

Each patient was followed for three months post-surgery, with the Foley catheter being removed during a follow-up clinic visit on day 12. Three months after successful surgery, patients were asked to complete the WHOQOL-BREF questionnaire again. Participants were allowed to complete the

questionnaire with the assistance of a nurse who was blinded to the study. All collected data were recorded in a predesigned proforma by the principal investigator.

Data were entered and analysed using SPSS version 26.0 (IBM Corp. Released 2019). For continuous variables, such as age, parity, duration of fistula, and pre- and post-operative WHOQOL-BREF scores, the mean \pm standard deviation or median with interquartile range (IQR) were calculated. Categorical variables, including educational status, socioeconomic status, marital status, and residential status, were summarised using frequency and percentage distributions. The paired sample t-test or Wilcoxon signed-rank test, as appropriate, was employed to compare pre- and post-operative WHOQOL-BREF scores at a 5% level of significance. Stratification was performed based on age, parity, educational status, socioeconomic status, marital status, residential status, and duration of fistula to adjust for potential confounding factors influencing overall pre- and post-operative WHOQOL-BREF scores. Following stratification, the paired sample t-test or Wilcoxon signed-rank test was applied, with a p-value ≤ 0.05 considered statistically significant.

RESULTS

We included 30 patients in this study to compare the pre- and post-operative WHOQOL-BREF scores after vesicovaginal fistula (VVF) repair. The mean age of the patients was 35.50 ± 8.87 years. Parity ranged from 1 to 4, with a median of 2 (IQR = 1) and a confidence interval (CI) of 1.59-2.27. The median duration of the fistula was 8.5 weeks (IQR = 6) with a CI of 7.85-10.61. Pre-operative WHOQOL-BREF scores ranged from 5 to 24, with a median of 10.0 (IQR = 9).

The mean preoperative WHOQOL-BREF score was 12.17 ± 5.77 , while the mean postoperative WHOQOL-BREF score significantly improved to 96.67 ± 11.86 .

Regarding residential status, 13 patients (43.3%) were from urban areas, while 17 patients (56.7%) were from rural areas. Four patients (13.3%) were unmarried and had a history of pelvic trauma, whereas 26 patients (86.7%) were married. Among the married women, 14 developed VVF due to obstetric complications, and 12 had a history of gynaecological procedures leading to VVF formation.

Educational status revealed that 6 patients (20.0%) had no formal education, 11 patients (36.7%) had primary-level education, 9 patients (30.0%) had secondary-level education, and 4 patients (13.3%) had attained graduate-level education.

Comparison of pre-operative and post-operative WHOQOL-BREF scores demonstrated a statistically significant improvement in post-operative quality of life (QoL) (p-value = 0.0001). Stratification based on age, parity, duration of fistula, residential status, marital status, and educational status revealed no statistically significant effect on the pre- and post-operative WHOQOL-BREF scores as shown in Table 1.

Table 1. Comparison of Mean Pre-operative and Post-operative WHOQOL-BREF Scores Across Various Demographic and Clinical Variables.

		Mean Pre-op WHOQOL-BREF Score	Mean post-op WHOQOL-BREF Score
Age groups (Years)	20-40	12.24 ± 4.96	97.59 ± 11.56
	>40	12.08 ± 6.91	95.46 ± 12.61
	P-Value	0.94	0.63
Parity	1-2	11.22 ± 5.75	93.39 ± 11.08
	>2	15.29 ± 5.02	107.43 ± 7.32
	P-Value	0.06	0.12
Duration of VVF (weeks)	4-12	13.0 ± 6.16	97.29 ± 11.72
	>12	8.83 ± 1.47	94.17 ± 13.21
	P-Value	0.027	0.12
Marital Status	Married	11.38 ± 5.41	96.42 ± 12.31
	Unmarried	17.25 ± 6.23	98.25 ± 9.63

	P-Value	0.15	0.79
Residential Status	Urban	11.15±5.68	99.69±12.36
	Rural	12.94±5.90	94.35±11.28
Educational Status	P-Value	0.40	0.22
	Primary level Education	11.45±5.26	97.64±10.52
	Secondary level Education	12.11±6.64	94.67±9.88
	Graduate	10.25±4.78	95.75±18.99
	No Formal Education	14.83±6.43	98.5±14.40
	P-Value	0.49	0.198

DISCUSSION

In developed countries, genitourinary fistula (GUF) is a rare complication of pregnancy, largely due to effective antenatal care and the reduction in the duration of the second stage of labour, which has nearly eradicated obstetric genitourinary fistulas [13]. In contrast, in developing countries, prolonged obstructed labour remains a common cause of GUF [14, 15]. In our setting, 80% of GUF patients were from rural areas, and 20% were from the low socioeconomic class in urban populations. These women typically experienced prolonged labour (20–50 hours) under the care of traditional birth attendants before being referred to a healthcare facility.

Surgical repair of genitourinary fistulas began over a century ago, yet controversy persists regarding the optimal timing and approach for repair. Opinions vary on the appropriate timing, route, and technique for repairing GUF [16]. In our series, all obstetric fistulas were repaired at least three months postpartum to allow for the resolution of oedema and inflammation. Although some surgeons report excellent outcomes with early repair, this approach may not be suitable for all cases [17]. Many of the women in our study were neglected, malnourished, and suffering from untreated urinary infections and anaemia. Delaying surgery in such cases allows time for tissue recovery and infection management [18].

Regarding the route of repair, the vaginal approach was preferred in our series, as in others, due to its benefits of lower complication rates, minimal blood loss, faster postoperative recovery, and shorter hospital stays [19]. The abdominal approach was reserved for fistulas located high on the bladder wall, supratirangular (post-hysterectomy or post-abortion) fistulas, and ureterovaginal fistulas [20].

Obstetric vesicovaginal fistula (VVF) is a significant maternal morbidity due to its severe impact on the health of affected women [20]. However, a review of the literature reveals few studies on the quality of life of women with VVF. In our study, a significant proportion of women reported subjective satisfaction with their health status following successful fistula repair, highlighting the benefits of surgical intervention. This is understandable as successful repair eliminates persistent urinary leakage, improving personal hygiene, self-esteem, and interpersonal relationships. The significant improvement ($p<0.01$) in the physical health domain post-repair was likely due to improved personal hygiene and the healing of perineal excoriations. Women also reported enhanced self-esteem, better concentration, and improved sleep patterns. A significant proportion ($p<0.005$) of women expressed satisfaction with their mental health after repair, indicating the psychological trauma associated with unrepairs VVF, including loss of self-esteem, anxiety, and depression [21]. The study also found a significant improvement in social health, with many women reporting better interpersonal and sexual relationships, likely due to restored personal hygiene and the resolution of perineal excoriation [22]. These conditions can strain intimate relationships, sometimes leading to marital discord and divorce [23].

The mean age of participants in our study was 35.50 ± 8.87 years. In comparison, a study by Debela TF et al. reported a mean age of 27.23 ± 7.48 years [9], while another study found a mean age of 41.7 years (range 21–81) [24]. The parity of patients in our study ranged from 1 to 4, with a median of 2 (IQR = 1, C.I. = 1.59–2.27). Umoiyoho et al. reported parity less than 1 in 53.3% of patients, 1–4 in

40.0%, and more than 4 in 6.7% [25]. The duration of the fistula in our study ranged from 4 to 18 weeks, with a median of 8.5 weeks (IQR = 6, C.I. = 7.85–10.61). Singh V et al. reported a mean fistula duration of 25.16 ± 5.76 months [8].

In our study, 43.3% of the patients were urban residents, while 56.7% were from rural areas. Singh S et al. reported that 75.3% of women in their study were from rural areas [10]. Marital status in our study showed that 86.7% of women were married, and 13.3% were unmarried. Umoiyoho et al. reported that 80% of women were married [25], while Singh S et al. found that 86% of women were married [8], with many having married at an early age (15–19 years), contributing to the incidence of fistula.

Educational status in our study revealed that 20.0% of women had no formal education, 36.7% had primary education, 30.0% had secondary education, and 13.3% were graduates. Umoiyoho et al. found that 53.3% of women had secondary education, 40% had primary education, and 6.7% had no formal education [25].

In our study, the mean \pm standard deviation of the WHOQOL-BREF scores before and after surgery were 12.17 ± 5.77 and 96.67 ± 11.86 , respectively. The p-value was very high (0.0001). Singh et al. also reported significant improvements in overall quality of life (p-value 0.0001), physical health (p-value 0.0001), psychological health (p-value 0.0001), and social health (p-value 0.0001) [8]. Debela et al. reported an overall quality of life score of 58.17 ± 7.2 before surgical repair and 71.20 ± 10.79 after repair [9].

Obstetric fistula disproportionately affects women with low levels of education in rural areas, particularly in poorly performing regions. Poor awareness of when and where to seek medical help during difficult labour and poor quality of care at healthcare facilities were identified as major causative factors [26]. Delivery by trained providers and early referral were highlighted as important preventive measures against obstetric fistula. Many women with fistulas experience social isolation due to the unpleasant odour and urinary dribbling [26]. Despite facing economic hardships, families generally supported the treatment of affected women [27].

To mitigate these challenges, it is crucial to enhance birth preparedness during antenatal care and at the community level, ensuring timely access to care during early labour. Improving the quality of care at healthcare facilities requires a multipronged approach [28]. Additionally, routine psychological evaluation and counselling should be offered to fistula patients and their families to help them cope with the adverse psychosocial and economic circumstances. In our study, significant improvements were observed in the physical health domain of WHOQOL-BREF among women after successful repair ($p = 0.0001$). This improvement is likely due to the relief from persistent urinary leakage and perineal wetness, which restores self-esteem, improves sleep patterns, and increases work capacity. Consistent with other studies, our findings also indicate a statistically significant improvement in the social health domain scores between preoperative and postoperative assessments using the WHOQOL-BREF questionnaire.

This study has several limitations that should be considered. The small sample size of 30 participants may limit the generalizability of the findings to the broader population of women with genitourinary fistulas. Additionally, the three-month follow-up period may not fully capture the long-term effects of fistula repair on quality of life, and the study's single-center design could limit the applicability of the results to other healthcare settings. The potential for response bias is also a concern, as participants completed the WHOQOL-BREF questionnaire with assistance, which might have influenced their responses. Moreover, the lack of a control group makes it difficult to attribute the observed improvements in quality of life solely to the surgical intervention. Finally, the exclusion of patients with fistulas resulting from malignant disease or radiation therapy may restrict the applicability of the findings to all women with genitourinary fistulas, particularly those with more complex cases.

CONCLUSION

In conclusion, this study demonstrates that genitourinary fistula repair at our tertiary care hospital has a significant and profoundly positive impact on patients' quality of life. The findings

underscore the critical importance of timely and appropriate surgical intervention in improving overall well-being. Additionally, ongoing comprehensive care and support are essential to ensure holistic recovery and long-term health for these patients.

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