

Quality of life before & after genitourinary fistula repair - Insights from WHOQOL-BREF

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Abstract

Objective: To compare preoperative and postoperative quality of life in women undergoing genitourinary fistula repair.

Method: The quasi-experimental study was conducted at the Department of Urology, Sindh Institute of Urology and Transplantation, Karachi, from January to December 2023, and comprised female patients diagnosed with vesicovaginal fistula secondary to gynaecological and obstetric procedures or trauma. The quality of life was assessed using the brief version of the World Health Organization Quality of Life scale. The participants completed the questionnaire both before the surgical intervention and three months after successful fistula repair. Data was analysed using SPSS 26.

Results: There were 30 women with mean age 35.50 ± 8.87 years. Mean quality of life score at baseline was 12.17 ± 5.77 which improved significantly to 96.67 ± 11.86 post-intervention ($p=0.0001$).

Conclusion: Genitourinary fistula repair significantly and positively impacted the patients' quality of life.

Key Words: Genitourinary fistulae, Vesicovaginal fistulae, Ureterovaginal fistulae, O'Connor repair, Robotic-assisted VVF repair, Transvaginal repair, WHOQOL-BREF.

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Introduction

Genitourinary fistula (GUF) is a prevalent issue in the South Asian region, primarily involving vesicovaginal fistulas (VVF) and ureterovaginal fistulas (UVF), 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 the 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 GUF occur annually, with approximately two million women currently living with untreated fistulas in Asia and sub-Saharan Africa.² A study indicates an annual incidence ranging from 50,000 to 100,000 new cases, with over three million women estimated to have unrepaired fistulas.³

GUF continues to be a challenging condition with severe

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consequences for patients in developing countries. In these regions, approximately 90% of fistulas are the result of neglected and obstructed labour.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 in 2021 reported a mean QOL score of 37.52 ± 10.99 .⁷ Another study 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 QOL 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 burden on the 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.

The current study was planned to compare the QOL before and after GUF repair.

Patients and Methods

The quasi-experimental study was conducted at the Department of Urology, Sindh Institute of Urology and Transplantation (SIUT), Karachi, from January to December 2023. After approval from the institutional ethics review committee, all female patients presenting to 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 kidney-ureter-bladder (KUB), computed tomography (CT) urogram with cystogram, and examination under anaesthesia (EUA), which comprised inspection, cystoscopy, vaginoscopy and, in cases where UGF was suspected, retrograde pyelography to assess the upper urinary tract. Patients diagnosed with VVF secondary to gynaecological and obstetric procedures or trauma were included after obtaining informed written consent. The sampling was done using non-probability consecutive sampling technique. Patients diagnosed with UVF, vesicouterine fistula (VUF) or VVF secondary to malignant disease or radiation therapy were excluded to maintain a clinically homogeneous cohort, as these conditions have fundamentally different baseline health status, surgical complexity, and postoperative recovery profiles compared to benign obstetric or iatrogenic fistulas.

The sample size was determined using the Open Epi calculator¹³ in the light of literature⁸ with confidence interval (CI) 95% and power (1-beta [β]) 80%.

The patients were asked to complete the brief version of the World Health Organisation Quality of Life (WHOQOL-BREF)¹⁴ questionnaire, which had 26 items 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 QOL 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 the 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 (GA), which included an examination under anaesthesia and bilateral ureteric catheterisation. The surgical approach, whether transvaginal or transabdominal, for VVF repair was determined based on EUA findings. Postoperatively, the 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, the patients were discharged on the fifth day with an indwelling Foley catheter and a prescription for anticholinergic medication.

Each patient was followed up for three months post-surgery, with the catheter being removed during a follow-up clinic visit on day 12. Three months after successful surgery, the patients were asked to complete the WHOQOL-BREF questionnaire again. The participants were allowed to complete the questionnaire with the assistance of a nurse who was blinded to the study. Data was recorded using a predesigned proforma by the principal investigator.

Data was analysed using SPSS 26. For continuous variables, mean $\pm$ standard deviation or median with interquartile range (IQR) were calculated. Categorical variables were expressed as frequencies and percentages. The paired sample t-test or Wilcoxon signed-rank test, as appropriate, was employed to compare preoperative and postoperative WHOQOL-BREF scores at a 5% level of significance. The Shapiro-Wilk test was used to assess data normality. Stratification was performed based on age, parity, educational status, socioeconomic status (SES), marital status, residential status and the duration of fistula to adjust for potential confounding factors influencing overall baseline and postoperative WHOQOL-BREF scores. Following stratification, the paired sample t-test or Wilcoxon signed-rank test was applied. $P \leq 0.05$ was considered statistically significant.

Results

There were 30 women with mean age 35.50 ± 8.87 years. Parity ranged 1-4, with a median of 2 (IQR = 1). The median fistula duration was 8.5 weeks (IQR = 6) mean postoperative WHOQOL-BREF score significantly improved to 96.67 ± 11.86 . Regarding residential status, 13(43.3%) patients were from urban areas, while 17(56.7%) were from rural areas. There were 4(13.3%) patients who were unmarried and had a history of pelvic trauma, whereas 26(86.7%) were married. Among the married women, 14(53.8%) developed VVF due to obstetric complications, and 12(46.1%) had a history of gynaecological procedures leading to VVF formation.

Educational status revealed that 6(20%) patients had no formal education, 11(36.7%) had primary-level education, 9(30.0%) had secondary-level education, and 4(13.3%) had attained graduate-level education.

Mean WHOQOL-BREF score at baseline was 12.17 ± 5.77 (range: 5-24), which improved significantly in post-

Table: Comparison of mean preoperative and postoperative quality of life scores across various demographic and clinical variables (n=30).

	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
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
P-Value	0.40	0.22
Educational Status		
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

WHOQOL-BREF: World Health Organisation Quality of Life-Brief, VVF: Vesicovaginal fistula.

intervention ($p=0.0001$). Subgroup analysis based on age, parity, duration of fistula, residential status, marital status and educational status revealed no significant effect on WHOQOL-BREF scores (Table).

Discussion

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 examined the preoperative and postoperative WHOQOL-BREF scores to assess statistical differences, making the current study the first of its kind.

In developed countries, 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 GUFs.¹⁵ In contrast, in developing countries, prolonged obstructed labour remains a common cause of GUF.^{16,17} In the current sample, 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 (TBAs) before being referred to a healthcare facility.

Surgical repair of GUFs began over a century ago, but controversy persists regarding the optimal timing and approach for repair. Opinions vary on the appropriate timing, route and technique for repairing GUF.¹⁸ In the current 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.¹⁹ Many of the women in the current study were neglected and malnourished, and were suffering from untreated urinary infections and anaemia. Delaying surgery in such cases allows time for tissue recovery and infection management.²⁰

Regarding the route of repair, the vaginal approach was preferred in the current series, as in others, due to its benefits of lower complication rates, minimal blood loss, faster postoperative recovery, and shorter hospital stays.²¹ The abdominal approach was reserved for fistulas located high on the bladder wall, supratirangonal (post-hysterectomy or post-abortion) fistulas, and UVFs.²¹

Obstetric VVF is a significant maternal morbidity due to its severe impact on the health of the affected women.²¹ In the current 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 unrepaired VVF, including loss of self-esteem, anxiety and depression.²² 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.²³ These conditions can strain intimate relationships, sometimes leading to marital discord and divorce.²⁴

The mean age of participants in the current study was 35.50 ± 8.87 years. An earlier study reported a mean age of 27.23 ± 7.48 years⁹, and another study found a mean age

of 41.7 years (range 21-81 years).²⁵ The parity of patients in the current study ranged 1-4, while Umoiyoho et al. reported parity <1 in 53.3% of patients, 1-4 in 40%, and >4 in 6.7%.²⁶ The duration of the fistula in the current study ranged 4-18 weeks, with a median of 8.5 weeks. Singh V et al. reported a mean fistula duration of 25.16±5.76 months.⁸

In the current 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 were from rural areas.¹⁰ Marital status in the current study showed that 86.7% of women were married, and 13.3% were unmarried. Umoiyoho et al. reported that 80% of women were married²⁶, while Singh S et al. found that 86% of women were married⁸, with many having married at an early age (15-19 years), contributing to the incidence of fistula.

Educational status in the current study revealed that 20% of women had no formal education, 36.7% had primary education, 30% 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.²⁶

In the current study, the mean WHOQOL-BREF scores before and after surgery were 12.17±5.77 and 96.67±11.86, respectively ($p=0.0001$). Singh et al. also reported significant improvements in overall QOL ($p=0.0001$), physical health ($p=0.0001$), psychological health ($p=0.0001$) and social health ($p=0.0001$) [8]. Debela et al. reported an overall QOL 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.²⁷ 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.²⁷ Despite facing economic hardships, families generally support the treatment of affected women.²⁸

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.²⁹ 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 the current 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 literature^{8,22}, the current findings also indicate a significant improvement in the social health domain scores between preoperative and postoperative assessments using the WHOQOL-BREF questionnaire.

The current study has several limitations. The small sample size of 30 participants may limit the generalisability of the findings. Additionally, the three-month follow-up period may not fully capture the long-term effects of fistula repair on QOL, and the study's single-centre design could limit the applicability of the results to other healthcare settings. The potential for response bias is also a concern, as the participants completed the WHOQOL-BREF questionnaire with assistance, which might have influenced their responses. The use of non-probability consecutive sampling in a tertiary public-sector hospital may have introduced selection bias, particularly with overrepresentation of rural and low socioeconomic patients, which reflects the real-world demographic seen at SIUT. Moreover, the lack of a control group due to small number of patients undergoing abdominal repair makes it difficult to attribute the observed improvements in QOL 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 GUF, particularly those with more complex cases. Larger multicentre studies are needed to validate the current results.

Conclusion

GUF repair had a significant and profoundly positive impact on patients' QOL. The findings underscored the critical importance of timely and appropriate surgical intervention in improving overall wellbeing. Additionally, ongoing comprehensive care and support are essential to ensure holistic recovery and long-term health for these patients.

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IS: Concept, data collection and drafting.

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SP: Data acquisition, drafting and literature search.

ML: Critical review, drafting and literature review.

AH: Concept, final approval and critical review of draft.