

Original Research Article

Quality of life and performance status after whipples surgery: experience from Sheikh Russel National Gastroliver Institute and Hospital

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Received: 06 June 2024

Accepted: 05 July 2024

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ABSTRACT

Background: Whipple surgery, or pancreaticoduodenectomy, is a complex surgical procedure often performed to treat pancreatic and periampullary cancers. Quality of life (QOL) and performance status are critical metrics for assessing post-operative outcomes. This study aimed to evaluate the QOL and performance status of patients after Whipple surgery in a tertiary care centre in Bangladesh.

Methods: This cross-sectional study was conducted among 64 patients who underwent Whipple surgery at the Sheikh Russel National Gastroliver Institute and Hospital, Dhaka, Bangladesh between January 2021, and January 2023. The World Health Organization Quality of Life-BREF (WHOQOL-BREF) and Eastern Cooperative Oncology Group (ECOG) performance scales were used to assess QOL and performance status, respectively. Data were analyzed using descriptive and inferential statistics.

Results: Most participants were aged between 43 and 53 years, with a mean age of 54.66 years, and were predominantly male (64.06%). Most participants rated their physical health (34.37%) and psychological state (37.50%) as "good." Most patients (57.81%) experienced uneventful post-operative recovery. About (34.37%) was "restricted in strenuous work." Chemotherapy negatively impacted physical health ($r=-0.198$, $p=0.02$).

Conclusions: The findings indicate that most patients experienced favourable outcomes in both QOL and performance status following Whipple surgery. The results underscore the importance of holistic patient care and highlight potential areas for clinical improvement and future research.

Keywords: Pancreatic cancer, Pancreaticoduodenectomy, Quality of life, Whipple

INTRODUCTION

Pancreatic cancer poses a significant threat to global health, causing substantial morbidity and mortality. It ranks as the fourth leading cause of cancer death worldwide, with incidence and fatality rates on the rise. The global burden of pancreatic cancer has been extensively researched, identifying high-risk regions and demographic groups.¹⁻³ This concern is equally pressing in Bangladesh, where pancreatic cancer is increasingly

recognized as a public health issue, reflected in the rising incidence and mortality rates.⁴ The Whipple surgery, or pancreaticoduodenectomy, stands as a critical surgical treatment for pancreatic and periampullary tumors. Beyond its technical execution, the Whipple procedure is a vital weapon in the fight against aggressive malignancies.⁵ Despite its potential benefits, the procedure may complicate with post-operative complications and variable long-term outcomes. Complexities such as pancreatic fistulas, delayed gastric

emptying, and anastomotic leakage can significantly hinder patient recovery.⁶ Nonetheless, advancements in surgical techniques and perioperative care have improved morbidity, mortality, and survival rates following the Whipple procedure.⁷ Quality of life (QOL) post-Whipple surgery is a crucial aspect of recovery, influencing patient well-being and overall outcomes. QOL encompasses physical, emotional, and social well-being and serves as a vital metric for evaluating the success of surgical interventions.⁸ Factors affecting QOL after the Whipple procedure include patient age, comorbidities, the extent of surgery, and postoperative complications.⁹ Research indicates that long-term freedom from pain and a low risk of surgery-induced pancreatic insufficiency are critical for better QOL outcomes.¹⁰ Performance status metrics, such as the Eastern Cooperative Oncology Group (ECOG) performance scale, are essential for assessing how a patient's disease impacts their daily living abilities and overall performance status.¹¹ The ECOG scale ranges from 0 to 5, with lower scores indicating better functioning and higher scores reflecting greater disability.¹² These metrics are crucial for understanding the relationship between patient performance and long-term outcomes, including survival rates and hospital readmission.⁶ Studies have shown that better performance status is often linked to improved survival and reduced postoperative complications.¹³ The importance of QOL and performance status in post-surgical patients is evident in the evolving nature of the Whipple procedure, which continually adapts to improve patient outcomes.¹⁴⁻¹⁶ Comparative studies have demonstrated that the Whipple procedure and its variants can differentially impact QOL, with factors such as surgical technique influencing outcomes.¹⁷ This underscores the necessity for comprehensive care and individualized treatment strategies to enhance QOL and performance status in patients undergoing this complex but potentially life-saving surgery. Despite the extensive research on pancreatic cancer and the Whipple procedure globally, there is a lack of studies focusing on QOL and performance status specifically in the context of Bangladesh. This gap underscores the rationale for the current research project, which aims to evaluate these critical outcomes among patients undergoing Whipple surgery in Bangladesh. By addressing this gap, our study seeks to contribute valuable insights and improve the holistic care of patients in this region.

METHODS

A cross-sectional study was conducted from January 2021 to January 2023 to evaluate the quality of life (QOL) and performance status after Whipple surgery at the Department of Surgical Gastroenterology Unit1, Sheikh Russel National Gastroenterology Institute and Hospital (SRNGIH) in Dhaka, Bangladesh. The study population comprised patients who underwent the Whipple surgery within this period at the study hospital. The study recruited 64 patients using purposive sampling. Adult

patients who had an indication for Whipple surgery were included, irrespective of gender. Patients with advanced malignancy, ascites, or chronic illnesses affecting QOL, as well as those unwilling to participate, were excluded from the study. The Whipple surgery was performed following standard procedures. The study utilized a validated questionnaire, which was explained to respondents before face-to-face or telephone interviews. The semi-structured questionnaire consisted of two parts: the WHOQOL-BREF questionnaire, which assessed four domains related to QOL aspects, and the ECOG score, which assessed performance status. The study obtained necessary permissions from the hospital and surgical gastroenterology unit, and data were collected willingly through face-to-face or telephone interviews. The same questionnaire was used for all respondents, and they had the option to skip questions if desired. Data were collected from inpatient and home settings, and descriptive and inferential statistics were conducted using SPSS version 25. Tests such as Chi-square, Mann-Whitney U, and Spearman rank correlation were employed for significance analysis. The key variables included demographics (age, gender, occupation, education, monthly family income, and comorbidities), quality of life (assessed using WHOQOL-BREF domains like physical health, psychological aspect, social relationship, and environmental aspects), performance status (assessed using the ECOG score), and postoperative outcomes (including complications, hospital stay, readmissions, and re-interventions). The study was approved by the institutional ethics committee, and informed written consent was obtained from all participants. Participant confidentiality was maintained throughout the study. Despite its robust design, the study had limitations, including a cross-sectional design that limited causal inference, a small sample size that affected generalizability, a single-center setting that limited external validity, and a hospital-based sample that may not represent the broader population.

RESULTS

The baseline characteristics of the participants in this study, among 64 individuals, were examined and presented in Table 1. The age distribution showed that most participants (35.49%) were between the ages of 43 and 53 years, followed by 29.69% in the age range of 54 to 64 years. The mean age of the participants was 54.66 years. 64.06% of the participants were male and 35.94% were female. In terms of occupation, the largest group of participants, 39.06%, were in agriculture, 35.93% were housewives, and 15.62% were retired. Most participants had a primary level of education (50.10%), while 23.43% had completed higher secondary education. The monthly family income varied, with 45.31% of participants having an income between TK 51000 and 100000, and the Mean±SD monthly income was TK 58727±33215.11. Regarding comorbidities, 34.37% of participants had hypertension, 12.50% had chronic obstructive pulmonary

disease (COPD), and 6.25% had diabetes mellitus (DM), while 40.87% reported no comorbidities. Concerning the habit of consuming smokeless tobacco or smoking, 12.50% of participants were smokers, 23.43% were ex-smokers, and 15.62% used smokeless tobacco. Most of the participants, 84.37%, were diagnosed with periampullary carcinoma, making it the most common diagnosis among the study group.

This was followed by distal cholangiocarcinoma and carcinoma of the head of the pancreas, which accounted for 9.37% and 7.81% of the participants, respectively. The least common diagnosis was ampullary growth, with 4.68% of participants diagnosed with this condition.

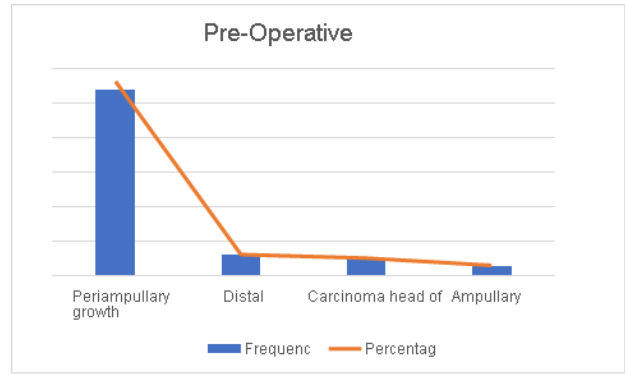


Figure 1: Distribution of participants by pre-operative diagnosis (n=64).

Table 1: Baseline characteristics distribution of the participants (n=64).

Characteristics	Frequency	Percentage
Age range (in years)		
32-42	10	15.63
43-53	23	35.94
54-64	19	29.69
65-75	12	18.75
Mean±SD		54.66±6.96
Gender		
Male	41	64.06
Female	23	35.94
Occupation		
Agricultural	25	39.06
Housewife	23	35.93
Private service	7	10.93
Retired	10	15.62
Education		
Primary	32	50.10
Secondary	10	15.62
Higher secondary	15	23.43
Graduate	7	10.93
Monthly family income		
TK. 20000-50000	23	35.93
TK. 51000-100000	29	45.31
TK. 100000-200000	12	18.75
Mean±SD		58727±33215.11
Comorbidities		
Hypertension	22	34.37
Ischemic Heart Disease	3	4.68
COPD	8	12.50
CKD	1	1.56
DM	4	6.25
No Comorbidities	26	40.87
Habit of consuming smokeless tobacco or smoking		
Smoker	8	12.50
Ex-smoker	15	23.43
Smokeless Tobacco	10	15.62

Table 2: Distribution of participants by WHOQOL-BREF domain categorization (n=64).

WHOQOL-BREF Domains	Category	Frequency	Percentage
Physical health	Very poor	4	6.25
	Poor	8	12.50
	Neither poor nor good	12	18.75
	Good	22	34.37
	Very good	18	28.12
Psychological aspect	Very poor	2	3.10
	Poor	3	4.68
	Neither poor nor good	13	20.31
	Good	24	37.50
	Very good	22	34.37
Social relationship	Very dissatisfied	8	12.50
	Dissatisfied	10	15.60
	Neither satisfied nor Dissatisfied	24	37.50
	Satisfied	12	18.75
	Very satisfied	10	15.62
Environmental aspects	Very dissatisfied	10	15.62
	Dissatisfied	7	10.93
	Neither satisfied nor Dissatisfied	17	26.56
	Satisfied	18	28.12
	Very satisfied	12	18.75

Table 3: Distribution of patients according to post-operative event (n=64).

Post-operative event	Frequency	Percentage
Wound infection	10	15.62
Cholangitis	3	4.68
Sepsis	7	10.93
Pneumonia	7	10.93
Pancreatic leak	4	6.25
Biliary leak	3	4.68
Uneventful	37	57.81

The World Health Organization Quality of Life-BREF (WHOQOL-BREF) domain categorization for the study participants is presented in Table 2. For the physical health domain, the majority of participants, 34.37%, rated their health as "Good," while 28.12% rated it as "Very Good." A notable proportion of participants, 18.75%, rated their physical health as "Neither Poor nor Good," while 12.50% and 6.25% rated it as "Poor" and "Very Poor," respectively. In terms of psychological aspect, 37.50% of participants reported feeling "Good," and 34.37% reported feeling "Very Good." Meanwhile, 20.31% rated their psychological aspect as "Neither Poor nor Good," 4.68% rated it as "Poor," and 3.10% rated it as "Very Poor." For social relationships, most participants, 37.50%, were "Neither Satisfied nor Dissatisfied" with their social relationships, while 18.75% were "Satisfied," and 15.62% were "Very Satisfied." On the other hand, 15.60% were "Dissatisfied," and 12.50% were "Very Dissatisfied" with their social relationships. When

considering environmental aspects, 28.12% of participants were "Satisfied," and 18.75% were "Very Satisfied" with their environment. However, 26.56% were "Neither Satisfied nor Dissatisfied," 10.93% were "Dissatisfied," and 15.62% were "Very Dissatisfied" with their environment.

The distribution of post-operative events among the participants is outlined in Table 3. A majority of the patients, 57.81%, experienced uneventful post-operative recovery following the Whipple surgery. Among those who experienced complications, wound infection was the most common post-operative event, occurring in 15.62% of the patients. This was followed by pneumonia and sepsis, each affecting 10.93% of the patients. Pancreatic leak occurred in 6.25% of the participants, while cholangitis and biliary leak were observed in 4.68% of the patients each.

Figure 2 shows the distribution of patients according to the Eastern Cooperative Oncology Group (ECOG) performance status. The largest proportion of participants, 34.37%, was categorized as "Restricted in Strenuous Work," while 26.56% were classified as

"Ambulatory, Can Do Self-Care." Another significant portion of participants, 23.43%, was "Fully Active." Additionally, 12.50% were "Capable Only Limited Care," and a small fraction of participants, 3.10%, were "Completely Disabled."

Table 4: Mean±SD domain score of QOL compared with performance status (n=64).

Domain	ECOG score performance	Mean±SD	P value
General health	Fully active	71.02±10.94	0.049
	Restricted in strenuous work	62.92±9.44	
	Ambulatory, can do self care	49.45±18.22	
	Capable only limited care	46.12±16.54	
	Completely disabled	22.30±7.03	
Psychological aspects of QOL	Fully active	61.02±17.26	0.03
	Restricted in strenuous work	64.10±9.39	
	Ambulatory, can do self care	67.49±9.48	
	Capable only limited care	57.36±11.73	
	Completely disabled	39.72±14.77	
Social relationship	Fully active	52.85±14.91	0.07
	Restricted in strenuous work	61.75±11.73	
	Ambulatory, can do self care	54.12±14.42	
	Capable only limited care	55.93±14.22	
	Completely disabled	59.83±14.90	
Environmental	Fully active	58.35±7.71	0.87
	Restricted in strenuous work	69.60±10.48	
	Ambulatory, can do self care	38.10±17.90	
	Capable only limited care	29.17±18.31	
	Completely disabled	32.26±27.75	

Table 5: Correlation between QOL domains and clinical variables using WHOQOL-BREF scale (n=64).

Variable	Domains	Co-efficient (r)	P value
Chemotherapy	Physical health	-0.198	0.02
	Psychological aspect	0.017	0.84
	Social relationship	0.06	0.51
	Environment	-0.12	0.16
Pre-operative stenting	Physical health	-0.24	0.004
	Psychological aspect	-0.179	0.033
	Social relationship	-0.218	0.009
	Environment	-0.052	0.54
Monthly income	Physical health	0.16	0.06
	Psychological aspect	0.32	0.01
	Social relationship	0.251	0.003
	Environment	-0.19	0.023
Age of the patients	Physical health	-0.167	0.047
	Psychological aspect	-0.233	0.005
	Social relationship	0.043	0.615
	Environment	0.196	0.019

For the General Health domain, patients who were fully active had the highest mean score of 71.02±10.94, followed by those restricted in strenuous work with a mean score of 62.92±9.44. Patients who were ambulatory and could do self-care had a mean score of 49.45±18.22, while those capable of only limited care had a mean score of 46.12±16.54. The lowest mean score was observed in patients who were completely disabled, at 22.30±7.03. The association between general health and ECOG performance was statistically significant, with a p-value of 0.049. In the Psychological Aspects of QOL domain, the highest

mean score was observed in patients who were ambulatory and could do self-care, at 67.49±9.48. Patients restricted in strenuous work had a mean score of 64.10±9.39, while fully active patients had a mean score of 61.02±17.26. The mean score for patients capable of only limited care was 57.36±11.73, while patients who were completely disabled had the lowest mean score of 39.72±14.77. The association between psychological aspects of QOL and ECOG performance was statistically significant, with a p-value of 0.03. For the Social Relationship domain, the highest mean score was observed in patients who were completely disabled,

at 59.83 ± 14.90 , followed by those restricted in strenuous work, at 61.75 ± 11.73 . Patients capable of only limited care had a mean score of 55.93 ± 14.22 , while patients who were ambulatory and could do self-care had a mean score of 54.12 ± 14.42 . The lowest mean score was seen in fully active patients, at 52.85 ± 14.91 . The association between social relationships and ECOG performance was not statistically significant, with a p-value of 0.07. In the environmental domain, patients restricted in strenuous work had the highest mean score of 69.60 ± 10.48 . Patients who were fully active had a mean score of 58.35 ± 7.71 , while those who were ambulatory and could do self-care had a mean score of 38.10 ± 17.90 . The mean score for patients capable of only limited care was 29.17 ± 18.31 , while those who were completely disabled had the lowest mean score of 32.26 ± 27.75 . The association between environmental aspects of QOL and ECOG performance was not statistically significant, with a p-value of 0.87. The correlation between quality of life (QOL) domains and clinical variables using the WHOQOL-BREF scale is presented in Table 5. The impact of chemotherapy on QOL showed a negative correlation with physical health, with a co-efficient (r) of -0.198 and a significant p value of 0.02. Chemotherapy had a negligible positive correlation with psychological aspects ($r=0.017$, $p=0.84$) and social relationships ($r=0.06$, $p=0.51$), and a negative correlation with the environment ($r=-0.12$, $p=0.16$). Pre-operative stenting showed a significant negative correlation with physical health ($r=-0.24$, $p=0.004$), psychological aspects ($r=-0.179$, $p=0.033$), and social relationships ($r=-0.218$, $p=0.009$).

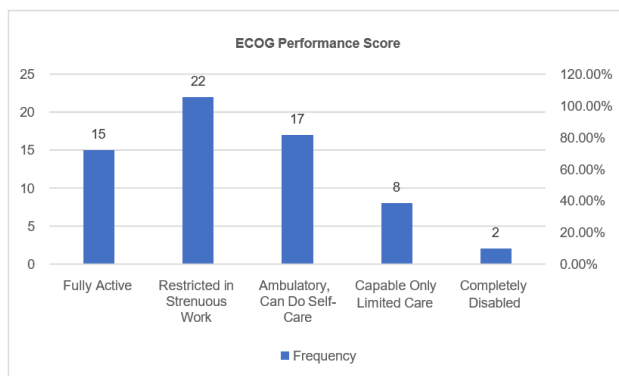


Figure 2: Distribution of patients according to ECOG score (n=64).

The correlation with environmental factors was negative but not significant ($r=-0.052$, $p=0.54$). Monthly income demonstrated a positive correlation with physical health ($r=0.16$, $p=0.06$), psychological aspects ($r=0.32$, $p=0.01$), and social relationships ($r=0.251$, $p=0.003$), while showing a negative correlation with the environment ($r=-0.19$, $p=0.023$).

The age of the patients was found to have a significant negative correlation with physical health ($r=-0.167$, $p=0.047$) and psychological aspects ($r=-0.233$,

$p=0.005$), while the correlation with social relationships was negligible ($r=0.043$, $p=0.615$). Age was positively correlated with the environment ($r=0.196$, $p=0.019$).

DISCUSSION

The present study investigated the quality of life and performance status of patients after undergoing Whipple surgery at the Sheikh Russel National Gastroenterology Institute and Hospital in Dhaka, Bangladesh. The findings were analyzed in the context of existing literature to offer a comprehensive understanding of the impact of the Whipple procedure on patients' well-being. The study cohort primarily consisted of middle-aged adults, with most participants (35.94%) falling within the 43-53 age range, and the mean age being 54.66 years. This demographic aligns with global trends, as pancreatic cancer predominantly affects individuals aged 50 and above.¹⁸ The study's gender distribution, with 64.06% male participants, reflects the higher incidence of pancreatic cancer in men, as seen in similar studies.¹⁹ The occupational distribution, with 39.06% engaged in agricultural work and 35.93% being housewives, underscores the rural and domestic socioeconomic context typical of Bangladesh. This characteristic is consistent with the findings of Hildebrand et al., who noted similar occupational trends among patients undergoing surgical treatment for chronic pancreatitis (9). In the physical health domain, most participants rated their health as either "Good" (34.37%) or "Very Good" (28.12%), indicating a relatively positive perception of health. This finding is in line with studies showing that patients who undergo successful Whipple procedures often report satisfactory physical health.²⁰ In the psychological aspect domain, many participants rated their mental state as "Good" (37.50%) or "Very Good" (34.37%). This positive outlook resonates with research indicating that psychological resilience is common among cancer patients (21). In the social relationship domain, a significant proportion of participants were "Neither Satisfied nor Dissatisfied" (37.50%) or "Satisfied" (18.75%). This outcome is reflective of findings in other studies, where cancer treatment often impacts social satisfaction.²² In the environmental domain, most participants were "satisfied" (28.12%) or "very satisfied" (18.75%), which aligns with the general trend that cancer patients often feel satisfied with their environment.¹⁹ A majority of patients (57.81%) experienced uneventful post-operative recovery, a positive outcome that aligns with the improving trends in surgical and post-operative care.²³ However, complications such as wound infection (15.62%), pneumonia (10.93%), and sepsis (10.93%) were observed, consistent with the typical complications following Whipple's procedure.⁶ These findings highlight the need for vigilant post-operative care and early intervention to manage such complications. The largest proportion of participants (34.37%) was "Restricted in Strenuous Work," while 26.56% were "Ambulatory, Can Do Self-Care," and 23.43% were "Fully Active." This distribution is similar to patterns observed in cancer

patient populations where performance status is often restricted due to disease burden or treatment side effects.²⁴ Patients who were "Fully Active" had the highest mean scores in the general health domain (71.02±10.94), while those who were "Ambulatory, Can Do Self-Care" have the highest mean scores in the psychological aspect domain (67.49±9.48). The significant association between the psychological aspects of QOL and ECOG performance ($p=0.03$) reflects the close link between functional status and mental well-being.²⁵ The correlation between quality of life and clinical variables highlighted several key findings. Chemotherapy was negatively correlated with physical health ($r=-0.198$, $p=0.02$), aligning with studies indicating that chemotherapy often has adverse effects on physical well-being.²⁶ Pre-operative stenting was negatively correlated with all QOL domains except for environment, reflecting the potential impact of invasive interventions on patient outcomes.²⁷ Monthly income was positively correlated with psychological aspects ($r=0.32$, $p=0.01$) and social relationships ($r=0.251$, $p=0.003$), supporting findings that higher income is associated with better quality of life.²² Age was negatively correlated with physical health ($r=-0.167$, $p=0.047$) and psychological aspects ($r=-0.233$, $p=0.005$), consistent with the general trend of declining quality of life with increasing age.²⁸ Overall, the findings of this study provide valuable insights into the quality of life and performance status of patients after Whipple surgery. The results align with and contribute to the broader literature on this topic, underscoring the importance of holistic patient care and the potential areas for improvement in post-operative outcomes.

Limitations of the study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

In this study, we assessed the quality of life and performance status of patients following Whipple surgery in Dhaka, Bangladesh. The findings highlighted that the majority of participants, primarily middle-aged males, reported favorable outcomes in both the physical and psychological domains of quality of life. Most patients experienced uneventful post-operative recovery, although some faced common complications such as wound infection and pneumonia. The Eastern Cooperative Oncology Group (ECOG) performance status revealed that a significant portion of patients were restricted in strenuous work but maintained an overall positive outlook on their general health and psychological well-being. The correlations between quality of life and clinical variables emphasized the negative impact of chemotherapy and pre-operative stenting on physical health, while higher income was associated with better psychological and social outcomes. These results underscore the importance of holistic patient care and the potential for improving post-operative quality of life and

performance status through tailored interventions and supportive care. The study's insights contribute to the broader understanding of patient outcomes after Whipple surgery and highlight areas for future research and clinical practice improvements.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Sultana A, Ahsan SMM, Alam MM, Sarkar B, Banik SK, Mahmud R, et al. Quality of life and performance status after whipples surgery: experience from Sheikh Russel National Gastro liver Institute and Hospital. *Int Surg J* 2024;11:1238-45.