Original article

Assessment of Quality of Life in Liver Donors Following Donor Hepatectomy for Living Donor Liver Transplantation: Early experience from Nepal

Tanka Prasad Bohara, Akanand Singh, Mukund Raj Joshi, Ashish Bhatta, Krisha Maharjan

Abstract

Introduction: Living donor liver transplantation is a life-saving procedure. The safety and outcome of healthy donors after donation remain an important concern, especially in low-volume centers from low- and middle-income countries. Limited data are available on donor quality of life and recovery in this setting.

Methods: We conducted a cross-sectional observational study of living liver donors at at KIST Medical College Teaching Hospital, Lalitpur, Nepal. Donor health-related QOL was assessed using the short form health survey (SF-36) questionnaire, and postoperative concerns, return to work, and donor satisfaction were recorded. Descriptive statistics were used to summarize findings.

Results: Eleven liver donors were included. The mean age of donors was 42.92 years, with 81.8% being female. The mean graft weight was 715.82 g, and the mean remnant liver percentage was 43.5%. Only one donor (9.1%) experienced a Grade II complication; the mean hospital stay was 9.3 days. The mean of the physical component score was 94.15, and the mean mental component score was 95.03. The most common postoperative concern was incisional pain (54.5%). Donors returned to their regular work at a mean of 3.8 weeks post-donation. All donors were satisfied with their decision to donate part of the liver.

Conclusions: The quality of life of living donors at our center is comparable to high-volume well-established centers.

Keywords: Donor Hepatectomy; Living Donors; Liver Transplantation; Nepal; Postoperative Complications; Quality of Life; SF-36

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Introduction

While living donor liver transplantation (LDLT) is a growing practice in Nepal, data on the post-operative donor quality of life of liver donors is limited.[1–3] There is a need to document and understand the experiences of donors at our institution to ensure comprehensive postoperative support and enhance donor recruitment.

Several gaps persist in the literature in the liver donor quality of life (QoL), particularly in low-volume settings. Research on liver donor QoL predominantly originates from high-volume centers with advanced care infrastructure, which may not reflect the outcomes in resource-limited hospitals where surgical expertise, postoperative care, and access to rehabilitation services are often constrained. This discrepancy highlights a critical need for studies evaluating QoL in low-volume settings to understand the unique challenges faced by donors in such environments.

This study aims to evaluate the QoL of individuals who underwent donor hepatectomy at at KIST Medical College Teaching Hospital using a validated questionnaire, the Short Form Health Survey (SF-36).[4]

Methods

This cross-sectional descriptive study was conducted in KIST Medical College Teaching Hospital from 1 April 2025 to 30 June 2025. All liver donors who had undergone donor hepatectomy at our center and had completed at least three months post-donation were included in this study. At KIST Medical College and Teaching Hospital, donors are selected according to both institutional and international standards. Those aged 18–55 years with compatible blood groups, normal liver function, and no major comorbidities are considered suitable. Each potential donor undergoes detailed imaging to assess liver quality and vascular as well as biliary anatomy, along with a comprehensive psychosocial evaluation to confirm both medical fitness and genuine willingness to donate. Donor hepatectomy is performed under general anesthesia using standard, meticulous surgical techniques. Postoperatively, donors receive close monitoring in the intensive care unit, with appropriate intravenous fluids, antibiotics, and analgesics. Pain management includes regular administration of paracetamol and diclofenac, with fentanyl provided as needed for additional comfort.

Quality of life was assessed using a standardized questionnaire short form health survey (SF-36), through a structured interview. Questions regarding postoperative concerns, symptoms, return to work, and satisfaction were also asked. The liver donors were approached during their routine follow-up visits at the hospital. For those donors who were unable to attend in person, an interview was conducted over the telephone. Demographics, pre-, intra-, and postoperative data were assessed by chart review. Surgical complications were graded using the Clavien-Dindo classification.[5]

The statistical analysis was performed using GNU PSPP 2.0.1. Descriptive statistics (Mean, Median, Range, and Standard deviation) were calculated for quantitative variables. Percentage and frequency were calculated for qualitative variables. The study was conducted following the Declaration of Helsinki criteria, and Institutional Review Board approval was obtained. Informed consent was taken from the participants.

Result

A total of 12 liver donors were identified. One of them was excluded from the study because she was less than three months post-donation. A total of 11 living liver donors were included in the study. In this study, all living donor liver transplantations were performed for adult recipients, and the majority of donors were the relatives of the recipients. Three willing donors were not suitable during this study period. One had fatty liver and two had atrial septal defect on cardiac evaluation.

Donor Demographics

The median age was 47 years (IQR: 36–49 years; Mean±SD= 42.92 ±9.94 years); nine donors (81.8%) were female. The median time since donation was 11 months (IQR: 5–19 months). The donors' mean Body Mass Index (BMI) was 26.16 kg/m², ranging from 19.5 to 32.9 kg/m².

Operative and Postoperative Outcomes

Ten donors underwent right lobe hepatectomy, and one donor underwent left lobe hepatectomy, according to the favorable volume and quality of the liver. The mean graft weight was 715.82 grams, with a range of 401–932 grams. The mean percentage of liver remnant was 43.48% (range: 36.0–59.0%). According to the Clavien-Dindo classification, only one donor (9.1%) experienced a Grade II complication (blood transfusion and pulmonary embolism), while the remaining 90.9% had no significant postoperative complications. The donor who developed the complication was 46 years female with a BMI of 21.5 kg/m^2 and remnant volume of 42%. The mean length of hospital stay was 9.27 days, with a range of 7–17 days.

Quality of Life Scores

The mean physical component score (PCS) was 94.15, and the mean mental component score (MCS) was 95.03. The

Table 1. SF-36 Domain Scores

Domain	Median (IQR)	Mean ± SD
Physical Functioning (PF)	95 (90–100)	94.09 ± 5.84
Role Physical (RP)	100 (100–100)	100 ± 0.0
Bodily Pain (BP)	95 (77.5–100)	90.68 ± 11.57
General Health (GH)	95 (90–95)	91.82 ± 6.43
Vitality (VT)	90 (85–95)	88.18 ± 9.29
Social Functioning (SF)	100 (100–100)	98.86 ± 3.77
Role Emotional (RE)	100 (100–100)	100 ± 0.0
Mental Health (MH)	96 (88–96)	93.09 ± 6.47

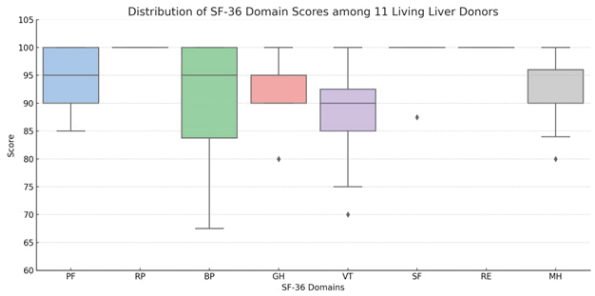

Figure 1. Boxplot showing the distribution of SF-36 domain scores among 11 living liver donors. *Boxes represent the interquartile range, horizontal lines indicate the median, and dots show individual scores*

median scores and means for each SF-36 domain are shown in **Table 1**, and **Figure 1** shows a box plot showing the distribution of SF-36 domain scores among donors. Most donors reported high physical functioning and minimal role limitations due to physical or emotional health.

Postoperative Concerns and Return to Work

Among the 11 living liver donors, 6(54.5%) reported experiencing incisional pain during the postoperative period, while 5 (45.5%) did not report any pain. Fatigue was noted by 1(9.1%) of donors, 2(18.2%) experienced mild abdominal discomfort, and 2(18.2%) had minor wound healing issues. In addition, 1(9.1%) of donors reported experiencing emotional difficulties, and 1(9.1%) expressed concerns related to body image following donation. The mean time to return to work after donation was 3.8 weeks, indicating that most donors resumed their occupational activities within about four months of surgery.

Donor Satisfaction

Only two (18.2%) of donors mentioned any ongoing concerns related to the donation, while nine (81.8%) reported no additional issues. A small proportion, two (18.2%), required referral for further medical or psychological care, including gynecology, psychiatry, or general medical follow-up. All the donors were satisfied with their decision to donate part of their liver.

Discussion

This study evaluated the health-related quality of life, postoperative symptoms, and return-to-work outcomes among 11 living liver donors in Nepal using the SF-36 questionnaire. The donors have generally reported good physical and mental health and high satisfaction.

The mean age of living liver donors in this study was 42.91 years, which is slightly higher than reported in other studies. A Nepalese study with 10 donors reported a mean of 27.9 years, while an Indian study with 200 donors reported a mean donor age of 38.5 ± 9.25 years.[3,6] A study from Turkey with 55 liver donors reported a median age of 32 years (range: 19–51 years).[3,6,7] A study from Iran with 140 donors found a mean age of 32.1 ± 7.3 years (range: 17–65), and a Polish study reported a median donor age of 36.8 years (range: 24–59).[8,9] A study of 14 donors from Thailand reported a mean of 39.86 years (range: 26–51) and a large study with 271 donors from America reported a mean donor age of 36.79 years.[10,11] Our donors were slightly older than those in many other studies, but they are within the age range for healthy living liver donors.

The finding of a preponderance of female donors (81.8%) is similar to female predominance reported in many other studies. Studies have reported 59.3% to 71.43% female donors.[6,8,10] However, Hesimov et al reported a male majority (62%), while Maharjan et al found an equal split between male and female donors.[3,7] The female preponderance may reflect cultural and familial factors.

The mean hospital stay in this study was 9.3 days, which is comparable to 10 days and 11.5 days reported in other studies.[3,10] However, Shamsaeefar et al and DiMartini et al have reported shorter stays of about 4–5 days. This may be due to different post-operative management protocols and hospital practices.[8,11]

The post-operative complications rate of donor hepatectomy can range from 15% to over 40%.[7,8,10] The complication rate of 9.1% is comparable with Maharjan et al's 10% but lower than 38.55% and 64% reported by Chandran et al and Udomsin et al, respectively.[3,6,10]

The literature indicates that LDLT donors typically have QOL that is comparable to, or even higher than, that of the general adult population. Physical aspects of QOL are frequently reported to decline significantly during the early postoperative period, particularly within the first three months following donation. However, most studies show that these domains return to baseline within 6 to 12 months for the majority of donors. In contrast, mental health domains are generally found to remain stable or unchanged throughout the donation process and recovery, often matching or exceeding normative population scores.[7,12–14]

In our study, the mean PCS was 94.15, and the mean MCS was 95.03. These scores are higher than those reported in comparable regional and international studies. A study from India found mean PCS and MCS scores of 48.75 ± 9.5 and 53.37 ± 6.16, respectively, at one-year post-surgery, with their physical recovery noted to be less than ideal compared to mental recovery.[6] Similarly, Shamsaeefar et al in Iran reported a mean PCS of 48.8 ± 14.6 and an MCS of 50.1 ± 6.9, which were close to their national population average.[8] In a Nepalese series by Maharjan et al using the SF-12, the mean PCS was 50.23 ± 5.96 and the MCS 56.24 ± 4.47, again indicating good quality of life.[3] Hesimov et al observed that physical scores dropped to 48.27 ± 9.08 at three months but recovered to 55.91 ± 5.22 by twelve months, with stable mental scores.[7] Janik et al reported higher long-term scores PCS 80.6 ± 17.0 and MCS 72.8 ± 19.2 with a median follow-up of over five years.[9] Notably,

Udomsin et al from Thailand reported individual domain means that were comparably high PCS 95.35, MCS 91.96, supporting that excellent outcomes are possible with robust donor selection and follow-up.[10] Our findings similarly demonstrate that donors in our center maintain good physical and mental health status after donation.

The most common postoperative issues in our study reported by donors were incisional pain in 54.5% of donors, followed by mild abdominal discomfort and minor wound healing problems in 18.2%. Parikh et al described that many donors experience bloating, loss of muscle tone, worries about how their body looks, and discomfort or numbness around the surgical scar.[12] Thuluvath et al also noted that many donors have abdominal pain, irritation or numbness near the scar, digestive problems like nausea or heartburn, and that some feel the pain after surgery is worse than they expected.[13] Similarly, De Carlis et al found that discomfort at the incision site is reported by about 13–39% of donors, and some also feel ongoing fatigue.[15] Our results show that while most donors recover well, a few do have mild, manageable issues that are similar to what other studies have found.

In our study, donors were able to do their regular work on average about 3.8 weeks after surgery, which is a bit earlier than reported in other studies where most donors are back at work within about three to four months.[12,14] Other research also shows that nearly all donors can return to their usual jobs without major long-term problems.[11,13] In our study, all donors said that they were satisfied with their decision to donate. This is very reassuring and matches what other studies have found. The fact that all recipients were adults and most donors were relatives may have positively influenced donor satisfaction and quality of life outcomes. Close familial relationships are often associated with greater acceptance and psychological resilience following donation. Studies have reported that over 90% of donors would willingly donate again.[6,7] Some donors in Reine et al's study said they would feel relieved if a deceased donor had been available instead; most still felt positive about their choice.[16] Even with some challenges after donation, living liver donors rarely regret donating and generally feel good about their decision.

With an increase in indications of liver transplantation and a shortage of organs, living donor liver transplantation is the answer. Living donations have several advantages for the recipient, like a reduction in waiting time, getting liver transplantation done electively, and getting a liver from a healthy donor. But the donors are at risk of undergoing a major hepatectomy, which has the potential for complications and even mortality, although at a very low rate.[15] Above all, there are no health benefits to the donors. So, the donor safety and outcomes are of utmost importance. This is especially more of a concern in a new liver transplantation program with low volume and from low middle-income countries. Our findings support that, with all limitations of the new program in low-volume centers, with proper planning, logistic and clinical support from an experienced team, and donor selection, a comparable donor outcome is achievable as compared to well-established and high-volume centers. This study also fills the gap in the literature, which lacks representation from low-volume centers.

This study has a few limitations. Our sample size was small, so the results might not be generalized. We looked at donors at only one point in time, so we can't say exactly how their quality of life changes over months or years. As the quality of life data were collected through interviews conducted by healthcare professionals, some participants may have felt hesitant to respond fully candidly, which could have influenced the findings. Another limitation of our study is the absence of normative SF-36 data for the general population in our country, which would have provided a stronger reference point for comparison and interpretation of donor quality of life.

Future studies should include more donors from different centers so we can see a bigger picture of how donors are doing across Nepal. Following donors over a longer period would help us understand how their health and daily life change over time. It would also be helpful to talk with donors in more depth to hear about their personal experiences, worries, and needs. Based on this, transplant programs should plan regular follow-ups and counseling to help donors recover fully, not just physically but also emotionally and socially.

Conclusions

This study shows that the quality of life of living donors at our center is comparable to high-volume well well-established centers. This adds valuable evidence from a low-income country setting and highlights the importance of ongoing support to ensure safe and rewarding living donor experiences.

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