Clinical characteristics and quality of life among Sri Lankan patients with chronic pancreatitis

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Abstract

Objective: We aimed to describe the clinical characteristics of chronic pancreatitis (CP) and patient quality of life (QOL) in a resource-limited setting.

Methods: We performed a cross-sectional study including patients with clinical and radiological features of CP. We collected clinical data and assessed QOL using the European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire.

Results: We included 103 patients (median age 44 years, 84 men). Median age at symptom onset was 36 (4–78) years. Around 70% of patients had diabetes mellitus and 62.1% had consumed alcohol; 36 (35%) were current smokers. The mean overall global QOL score was 68.7. Most patients (91.3%) sought treatment from multiple centers. Nineteen (18.5%) had pancreatic stone disease, 38 (36.9%) had persistent abdominal pain (median severity 7.8/10, 59 (57.3%) had steatorrhea, and 56 (54.4%) had jaundice. Poor QOL was significantly associated with weight loss, loss of appetite, and intractable pain. No correlation with age, sex, or alcohol consumption was noted.

Conclusion: A considerable proportion of patients with CP had troublesome symptoms. Intractable pain, loss of appetite, and weight loss were significantly associated with poor QOL. Further assessment is needed of patients’ psychosocial well-being and its association with QOL.

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Introduction

Chronic pancreatitis (CP) is a long-term, often debilitating condition that can considerably impact quality of life (QOL). In CP, persistent inflammation of the pancreas causes severe abdominal pain with an array of gastrointestinal symptoms.\(^1\),\(^2\) The condition requires multidisciplinary management with a physician, surgeon, gastroenterologist, pain management specialist, psychiatrist, and social workers, which is often difficult in a developing country with limited resources.\(^3\) Owing to the relapsing nature of the disease, patients often seek alternative and multiple treatment providers, which in turn may affect proper follow-up in a single health care center.

Evidence is limited regarding the clinical characteristics of patients with CP in South Asia, and especially in Sri Lanka. Only one previous study conducted over 15 years ago describes the clinical characteristics of CP in Sri Lanka.\(^4\) Furthermore, QOL in Sri Lankan patients with CP has not been studied previously. Therefore, we aimed to describe the clinical characteristics and analyze QOL among patients with CP in a resource-limited setting, and to identify its contributing factors.

Methods

We carried out a cross-sectional study at the Gastroenterology Unit of National Hospital of Sri Lanka. We included all patients with clinical and radiological features suggestive of definitive or probable CP, according to the American Pancreatic Association Practice Guidelines in Chronic Pancreatitis, during January 2017 to December 2018.\(^5\) This study was approved by the ethical review committee of the National Hospital of Sri Lanka (ETH/COM/2016). Signed informed consent was obtained from all participants before enrolling them in the study. We collected details on demographic and disease characteristics, as well as clinical features and treatment, in patient interviews and by reviewing the clinical records. We used a numerical rating scale ranging from 1 to 10 to quantify pain. Symptom control was assessed on a Likert scale (1–10). Scores 7 to 10, 4 to 6, and 1 to 3 were considered to indicate well controlled, moderately controlled, and poorly controlled symptoms, respectively.

QOL was assessed in a subset of patients using the European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ) C30, which is a validated tool consisting of one global QOL item, functional domains, and symptom scales.\(^6\) Although this tool was initially validated for cancers, it has been successfully validated for CP, showing good psychometric properties.\(^7\) All measures of the EORTC QLQ-C30 range in score from 0 to 100.\(^6\) A higher score indicates good QOL. Therefore, a high score on the global health and functional scales indicates a high-level QOL whereas a high score on the symptom scales indicates a high degree of symptoms.
We used a non-parametric test (Mann–Whitney U test) to determine statistical significance.

**Results**

We included 103 patients with CP in this study. Most patients were men \((n = 84, 81.6\%)\), with a sex ratio of 4.42:1. The median age of participants was 44 years (range: 10–80), and the median age at symptom onset was 36 years (range: 4–78). A summary of patients’ demographic and clinical characteristics is shown in Table 1. A higher proportion of Sinhalese (86.4%) and a lower proportion of Muslim (2.9%) patients was observed among our participants with CP, compared with the general ethnicity patterns in Sri Lanka (2012 census: Sinhalese: 75%, Muslim: 9.3%). Most patients had diabetes mellitus \((n = 72, 69.9\%)\) and 19 (18.5%) had pancreatic stone disease (pancreatic ductal calculi). Most (62.1%) patients had a history of alcohol consumption and 36 (35%) were current smokers. Thirty-eight (36.9%) patients had persistent abdominal pain, with a median severity of 7.8/10 (range 2–10); 44 (42.7%) patients had persistent dyspepsia, 59 (57.3%) had steatorrhea, 56 (54.4%) had jaundice, 79 (76.7%) had loss of appetite, and 88 (85.4%) had weight loss. The median number of hospital admissions per year was 6.7 (range: 2–41). Most patients \((91.3\%, n = 94\) sought treatment in multiple (three or more) centers (median 5.9 centers; range: 1–25). Of those, 43 patients (41.8%) sought treatment in five or more centers, and 6 patients (5.8%) sought alternative treatment.

We assessed QOL in a subset of patients \((n = 52, 50.5\%)\), according to EORTC QLQ-C30 scores. The mean overall global QOL score was 68.7 (range: 0–100), mean pain score was 37.2 (range: 0–100), overall symptom score was 23.1 (0–66.7), and the overall mean function score was 81.4 (37.8–100). We noted a significant association of poor QOL with weight loss (global QOL: \(p = 0.021\), overall symptoms: \(p = 0.002\), emotional and cognitive functioning: \(p = 0.011\) and 0.049, respectively), loss of appetite (overall symptoms: \(p = 0.028\); emotional, cognition, and social functioning: \(p = 0.047, 0.032, \) and 0.009, respectively), and intractable pain (overall symptoms: \(p = 0.001\), physical and cognitive functioning: \(p = 0.023\) and 0.009, respectively). No correlation with age, age at symptom onset, sex, or alcohol consumption was noted (Tables 2 and 3).

**Discussion**

We investigated clinical characteristics and QOL in a cohort of patients with CP. Most patients were men and the median age at onset was 36 years. These findings may be explained by the higher prevalence of alcohol consumption and smoking among Sri Lankan men, which are risk factors of CP.8 However, similar studies in neighboring countries have shown varying disease characteristics and sex distributions.9 In the Sri Lankan context, because young men are the usual bread winners in the family, CP may cause a considerable socioeconomic burden to the patient and their family. The lack of cessation with respect to tobacco and alcohol use was an important finding, which should be addressed with intervention by a psychiatrist.

Our analysis of clinical symptoms revealed that a considerable proportion of patients with CP had troublesome symptoms. Persistent abdominal pain was present in 37% of patients; among them, the median severity was 7.8/10, indicating a high severity. Persistent dyspepsia, steatorrhea, and jaundice were present in 42.7%, 57.3%, and 54.4% of patients, respectively. A multidisciplinary approach that includes a pain management specialist, psychiatrist, and social worker may be needed to control...
| Table 1. Demographic and clinical characteristics of chronic pancreatitis patients. |
|---------------------------------------------------------------|
| **Sex** | **n** | **%** |
| Male | 84 | 81.5 |
| Female | 19 | 18.5 |
| **Civil status** | | |
| Single | 27 | 26.2 |
| Married | 69 | 67.0 |
| Other | 7 | 6.8 |
| **Ethnicity** | | |
| Sinhala | 89 | 86.4 |
| Tamil | 10 | 9.7 |
| Muslim | 3 | 2.9 |
| Other | 1 | 1.0 |
| **Occupation** | | |
| Unemployed or homemaker | 15 | 14.6 |
| Student | 7 | 6.8 |
| Employed | 81 | 78.6 |
| **Body mass index, kg/m² (median/range)** | | |
| 20.1 (13–28.6) | |
| **Alcohol consumption** | | |
| Current | 12 | 11.7 |
| Never | 39 | 37.8 |
| Previous consumption | 52 | 50.5 |
| **Smoking** | | |
| Current | 36 | 35.0 |
| Non-smoker | 54 | 52.4 |
| Former smoker | 13 | 12.6 |
| **Other risk factors** | | |
| Abdominal trauma | 4 | 3.9 |
| Pancreatic divisum | 1 | 1.0 |
| Annular pancreas | 1 | 1.0 |
| Childhood malnutrition | 11 | 10.7 |
| Cassava consumption | 5 | 4.9 |
| Exposure to hydrocarbons | 9 | 8.7 |
| Hyperlipidemia | 22 | 21.4 |
| Hypercalcemia | 2 | 1.9 |
| **Hospital admissions per year (median/range)** | | |
| 6.7 (2–41) | |
| **Number of medical centers sought for treatment (median/range)** | | |
| 5.9 (1–25) | |
| **Managed at** | | |
| One center | 4 | 3.8 |
| Three or more centers | 94 | 91.3 |
| Five or more centers | 43 | 41.7 |
| **Age of onset of symptoms, years (median/range)** | | |
| 36 (4–78) | |
| **Duration of symptoms, years (median/range)** | | |
| 2.9 (0.1–38) | |
| **Age at diagnosis, years (median/range)** | | |
| 37 (10–79) | |
| **Symptom profile** | | |
| Persistent abdominal pain | 38 | 36.9 |
| Persistent dyspeptic symptoms | 44 | 42.7 |

(continued)
debilitating symptoms in patients with CP, to minimize follow-up non-attendance rates and ensure proper follow-up.

A previous study on CP in Sri Lanka was conducted during 2001 to 2003 among 50 patients with chronic calcific pancreatitis.4 The patient age and male predominance was comparable to the findings of the present study. Around 44% of patients in that previous study had a history of alcohol consumption whereas the proportion in our study was much higher (62%). In that past study, the prevalence of diabetes was 22% in the group with alcoholic pancreatitis and 43% in the non-alcoholic group, which was considerably lower than the proportions in the present study (70%). The authors of the previous study showed that the onset of diabetes was earlier in the non-alcoholic group than in the alcoholic group;4 the symptom profile and QOL were not studied.4

QOL in Sri Lankan patients with CP has not been previously studied. Among our study participants, QOL was moderate to poor, with the lowest QOL scores for pain and overall symptom subscales. The QOL in our patients with CP was considerably low, in comparison with that of the normal population.10 However, QOL in the present study was comparable to that with other gastrointestinal conditions in Sri Lankan populations.11–15 We found that intractable pain, loss of appetite, and weight loss were significantly associated with poor QOL. The presence of such symptoms in patients with CP should alert clinicians to the possibility of poor patient

|                        | n  | %  |
|------------------------|----|----|
| Steatorrhea             | 59 | 57.3 |
| Diabetes mellitus      | 72 | 69.9 |
| Jaundice               | 56 | 54.4 |
| Loss of appetite       | 79 | 76.7 |
| Weight loss            | 88 | 85.4 |
| Sleep disturbance      | 84 | 81.6 |
| Pancreatic stone disease (ductal calculi) | 19 | 18.4 |

**Diagnosis made by**
- General practitioner: 10 (9.7%)
- Consultant physician: 68 (66.0%)
- Consultant surgeon: 19 (18.4%)
- Traditional medical practitioner: 6 (5.8%)

**Management**
- Analgesics: 103 (100.0%)
- Oral hypoglycemic drugs: 38 (36.9%)
- Insulin: 27 (26.2%)
- Endoscopic sphincterotomy: 9 (8.7%)
- Endoscopic stone extraction: 5 (4.9%)
- Pseudocyst drainage with endosonography: 3 (2.9%)
- Endoscopic stent insertion: 2 (1.9%)
- Pancreaticoduodenectomy: 1 (1.0%)

**Symptom control**
- Well controlled: 13 (12.6%)
- Moderately controlled: 52 (50.5%)
- Poorly controlled: 38 (36.9%)
|                | Global QOL p value | Symptom QOL p value | Physical function QOL p value | Role function QOL p value | Emotional function QOL p value | Cognitive function QOL p value | Social function QOL p value |
|----------------|-------------------|---------------------|-------------------------------|---------------------------|-----------------------------|-----------------------------|-----------------------------|
| **Sex**        |                   |                     |                               |                           |                             |                             |                             |
| Male           | 70.73             | 0.269               | 24.39                         | 0.386                     | 83.74                       | 0.474                       | 80.08                       | 0.386                       | 79.07                       | 0.982                       | 89.43                       | 0.742                       | 80.89                       | 0.508                       |
| Female         | 61.36             | 0.181               | 18.18                         | 0.358                     | 81.82                       | 0.992                       | 78.49                       | 0.879                       | 76.61                       | 0.327                       | 89.25                       | 0.850                       | 77.42                       | 0.071                       |
| **Dyspepsia**  |                   |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 73.39             | 0.148               | 24.40                         | 0.358                     | 82.58                       | 0.992                       | 78.49                       | 0.879                       | 76.61                       | 0.327                       | 89.25                       | 0.850                       | 77.42                       | 0.071                       |
| Absent         | 61.90             | 0.212               | 21.12                         | 0.386                     | 84.44                       | 0.778                       | 80.56                       | 0.327                       | 88.89                       | 0.841                       | 88.89                       | 0.841                       | 87.78                       | 0.318                       |
| **Steatorrhea**|                   |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 67.06             | 0.757               | 22.96                         | 0.903                     | 84.44                       | 0.686                       | 82.54                       | 0.522                       | 77.78                       | 0.820                       | 88.89                       | 0.841                       | 77.78                       | 0.318                       |
| Absent         | 69.89             | 0.231               | 23.16                         | 0.258                     | 82.58                       | 0.752                       | 78.49                       | 0.522                       | 89.25                       | 0.841                       | 88.89                       | 0.841                       | 83.87                       |                             |
| **Diabetes mellitus** |     |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 68.43             | 0.546               | 24.01                         | 0.486                     | 81.41                       | 0.327                       | 81.82                       | 0.378                       | 77.27                       | 0.555                       | 90.40                       | 0.676                       | 81.31                       | 0.816                       |
| Absent         | 69.30             | 0.214               | 21.46                         | 0.486                     | 86.67                       | 0.713                       | 79.82                       | 0.555                       | 86.84                       | 0.676                       | 81.31                       | 0.816                       | 81.58                       |                             |
| **Jaundice**   |                   |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 67.26             | 0.950               | 23.99                         | 0.555                     | 82.38                       | 0.807                       | 85.71                       | 0.328                       | 73.21                       | 0.298                       | 90.48                       | 0.529                       | 71.43                       | 0.103                       |
| Absent         | 69.30             | 0.224               | 22.74                         | 0.258                     | 83.68                       | 0.754                       | 80.04                       | 0.298                       | 88.60                       | 0.529                       | 71.43                       | 0.103                       | 85.09                       |                             |
| **Loss of appetite** |     |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 66.05             | 0.297               | 28.58                         | 0.028                     | 80.99                       | 0.253                       | 76.54                       | 0.281                       | 72.22                       | 0.047                       | 85.18                       | 0.032                       | 72.84                       | 0.009                       |
| Absent         | 71.67             | 0.171               | 17.13                         | 0.289                     | 85.87                       | 0.138                       | 80.00                       | 0.281                       | 84.67                       | 0.032                       | 93.33                       | 0.032                       | 90.67                       |                             |
| **Weight loss**|                   |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 59.92             | 0.021               | 33.21                         | 0.002                     | 83.81                       | 0.780                       | 73.02                       | 0.135                       | 68.65                       | 0.011                       | 84.13                       | 0.049                       | 75.40                       | 0.149                       |
| Absent         | 74.73             | 0.162               | 16.21                         | 0.002                     | 83.01                       | 0.812                       | 84.68                       | 0.011                       | 92.47                       | 0.049                       | 85.48                       |                             |                             |                             |
| **Intractable pain** |     |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 66.36             | 0.124               | 32.00                         | 0.001                     | 78.27                       | 0.023                       | 69.14                       | 0.005                       | 76.54                       | 0.727                       | 83.95                       | 0.009                       | 74.69                       | 0.075                       |
| Absent         | 73.02             | 0.168               | 13.68                         | 0.001                     | 88.89                       | 0.999                       | 78.97                       | 0.727                       | 94.44                       | 0.009                       | 89.68                       |                             |                             |                             |
| **Alcohol consumption** |     |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 66.11             | 0.356               | 27.44                         | 0.111                     | 80.89                       | 0.316                       | 80.00                       | 0.592                       | 78.61                       | 0.813                       | 86.67                       | 0.206                       | 78.33                       | 0.265                       |
| Absent         | 72.35             | 0.171               | 17.13                         | 0.111                     | 86.67                       | 0.757                       | 77.65                       | 0.813                       | 92.42                       | 0.206                       | 85.61                       |                             |                             |                             |
| **Smoking**    |                   |                     |                               |                           |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| Present        | 63.49             | 0.284               | 26.86                         | 0.269                     | 79.68                       | 0.290                       | 78.57                       | 0.959                       | 79.37                       | 0.549                       | 84.92                       | 0.146                       | 71.43                       | 0.034                       |
| Absent         | 72.31             | 0.205               | 20.51                         | 0.269                     | 85.81                       | 0.779                       | 77.42                       | 0.549                       | 91.94                       | 0.146                       | 88.17                       |                             |                             |                             |
QOL. Data on QOL among patients with CP is scarce in South Asia and especially in Sri Lanka. Several previous studies conducted in Europe and investigating QOL in patients with CP have found poorer QOL in younger than older patients, leading to considerable socioeconomic consequences for the patient and society.\textsuperscript{16–19} In our study, we did not find a significant association between QOL and the patient age. Further large-scale studies are required to assess psychosocial well-being and its association with QOL in this patient population.

Previous studies have examined clinical variables such as pseudocyst, pancreatic calcification, main pancreatic duct dilatation, diabetes, and pancreatic insufficiency as possible factors contributing to poor QOL among patients with CP.\textsuperscript{20} Pain was the only consistent factor related to poor QOL in such studies and impaired all domains of the Short Form Health Survey (SF-36) QOL scoring system.\textsuperscript{20} We also found intractable pain to be significantly associated with QOL parameters. Thus, pain control is one of the most important therapeutic options for improving patients’ QOL, and extra effort is needed by clinicians to address this issue.

Sri Lanka has a free health care system predominantly run by the state, with nationwide availability of primary to tertiary level health care. Most of the population benefits from health care services free of charge. A considerable proportion of the patients in this study sought treatment from multiple health care centers. Inadequate symptom relief and anxiety associated with persistent symptoms despite treatment may have contributed to patients’ seeking treatment from multiple centers. The lack of proper long-term follow-up and adequate patient education about CP may also be contributing factors.

There are several limitations in the present study. This study was performed over 2 years and included just over 100 patients. A multicenter prospective study over a longer period and including a larger

### Table 3. Correlation of quality of life (QOL) and continuous variables.

|                          | Global QOL | Symptom QOL | Physical function QOL | Role function QOL | Emotional function QOL | Cognitive function QOL | Social function QOL |
|--------------------------|------------|-------------|-----------------------|------------------|-----------------------|------------------------|---------------------|
| Age at symptom onset     | -0.119     | 0.125       | -0.227                | 0.039            | 0.085                 | -0.147                | -0.128              |
| Spearman’s rho           | 0.400      | 0.377       | 0.105                 | 0.785            | 0.550                 | 0.297                 | 0.366               |
| P value                  | 0.401      | 0.672       | 0.199                 | 0.744            | 0.630                 | 0.310                 | 0.068               |
| Duration of symptoms     | -0.119     | 0.060       | -0.181                | -0.046           | -0.068                | -0.143                | -0.255              |
| Spearman’s rho           | 0.401      | 0.672       | 0.199                 | 0.744            | 0.630                 | 0.310                 | 0.068               |
| P value                  | 0.429      | 0.295       | 0.089                 | 0.849            | 0.786                 | 0.058                 | 0.062               |
| Age                      | -0.113     | 0.149       | -0.241                | -0.027           | -0.039                | -0.267                | -0.263              |
| Spearman’s rho           | -0.113     | 0.149       | -0.241                | -0.027           | -0.039                | -0.267                | -0.263              |
| P value                  | 0.634      | 0.622       | 0.669                 | 0.671            | 0.263                 | 0.041                 | 0.285               |
| No. of hospital admissions in past year | -0.068     | 0.071       | -0.061                | -0.061           | -0.160                | -0.287*               | -0.153              |
| Spearman’s rho           | 0.634      | 0.622       | 0.669                 | 0.671            | 0.263                 | 0.041                 | 0.285               |
| P value                  | 0.634      | 0.622       | 0.669                 | 0.671            | 0.263                 | 0.041                 | 0.285               |

*Significance at p < 0.05.
number of patients would help to clarify and expand our initial findings. QOL assessment is not routinely carried out in the current local clinical setting and is a rather neglected area of clinical practice in Sri Lanka. It is important that clinicians objectively assess QOL measures in patients with chronic disorders such as CP, to better identify factors that affect QOL. This would in turn help clinicians to focus on improving such factors and overall QOL of the patient.

**Conclusion**

In this study, QOL was moderate to poor among patients with CP, with the lowest scores for pain and overall symptom subscales. We found that intractable pain, loss of appetite, and weight loss were significantly associated with poor QOL. Among our patients with CP, the lack of smoking and drinking cessation was an important finding, which should be addressed with intervention by a psychiatrist. A multidisciplinary approach that includes a pain management specialist, psychiatrist, and social worker may be necessary to control symptoms, minimize follow-up non-attendance rates, and ensure proper follow-up in this patient population. Clinicians should objectively assess QOL measures in patients with CP, to better identify the contributing factors, which will help them to improve these factors and thus, the overall QOL of the patient.

**Authors’ contributions**

UJ, IDZ, and SLS formulated the concept and design of study, acquired the data, and analyzed and drafted the manuscript. UJ, TW, MN, SR, NS, and RR collected, analyzed, and interpreted the data and wrote the manuscript. MN, IDZ, and SLS contributed to the design and concept of the study and critically revised the manuscript for important intellectual content. All authors have read and approved the final version of the manuscript.

**Availability of data and materials**

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request. A part of this work was presented at the Asian Pacific Digestive Week (APDW-2019) in Kolkata, India and the abstract has been published online.21

**Declaration of conflicting interest**

The authors declare that there is no conflict of interest.

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