INTRODUCTION

According to the World Health Organization (WHO), people aged 60 and above made up nearly 3-19% of the total world population in 2020. This progressive increase in life expectancy contributes to the prevalence of chronic non-communicable diseases including mental illnesses. In Bhutan, the life expectancy at birth was 66 years in 2005 and increased to 70.20 years in 2022. Similarly, every Asian country has experienced the highest increase in the elderly population and over 50 percent of the elderly in the world live in Asia.

Bhutan is one of the developing countries witnessing a growing number of elderly due to better health, an increase in life expectancy, and a decline in the fertility rate. Till recently, elderly people were protected by the culture of extended family and community unity. However, rapid change in demographic patterns is affecting the informal care and support of elderly family members.

According to the National Statistics Bureau (NSB), nearly 44319 of the total population was above 60 years of age in 2005, which increased to 58,804 (7.54% of the total population) in 2017. In the past, elderly people were considered productive as they would perform usual work such as working in the field, taking care of their children, cattle herding and many more. With changing economic models, young people are migrating from rural to urban areas in search of better opportunities leaving elderly parents behind in the rural community and possibly suffering from social isolation and poor health conditions as most of them depended on remittance from children.

The advancement in socio-economic change may gradually set a boundary to the traditional family care system and this may come with long-term implications. The demographic profile of Bhutan shows that the old-age dependency ratio is increasing while the informal care and support system for older adults is decreasing. Thus, Quality of Life (QOL) has become an important area of concern for the health of the elderly, and need proper plans and strategies to improve their QOL. Therefore,
this study aims to examine the quality of life and identify the health needs of the elderly population in the rural community of Bhutan.

**METHODS**

This was an exploratory sequential mixed method design with a quantitative and descriptive qualitative component.

**Quantitative component**

The total population of elderly people aged 60-79 years in the Paro district was 3728 according to the National Statistical Bureau report 2017.1 The sample size was calculated using the Taro Yamane formula with a 95% Confidence Interval. A sample size of 403 was calculated based on the ratio of gender in elderly people and the sample collected are 170 male and 233 females.

**Data collection**

Three bachelors in nursing and midwifery students were recruited and trained for a week as research assistant. The research assistants are fluent in Tshangla, Dzongkha, Lhotshamkha and English. Each interview included a brief session to explain the aims and objectives of the study, information to obtain consent, right to non-participation, maintenance of anonymity and provision of a list of support services available in case participant(s) suffered emotional distress as a result of participating in the study.

**Steps for quantitative data collection**

- List of the elderly people of 4 selected villages block were obtained from Naja, Dogar, Shaba and Lungnyi, then sampling the number based on the proportion allocation technique.
- Interview was conducted in a private location where the conversation cannot be seen or heard by others or hold interviews in a convenient location, such as public place if privacy is maintained.
- Respondents were allowed someone else such as spouse or other family member during their interview.
- Interviewers provided necessary information on research project, including any issues/questions the participants had were addressed.
- Respondents were provided with written consent as well as verbal consent. It took 10-15 minutes to complete the questionnaires.

**Inclusion criteria**

- All elderly Bhutanese, both men, and women aged between 60 to 79 years, living in the reachable districts of Paro, Bhutan.
- He or she can at least speak one of the following languages: Dzongkha, Lhosthamkha, or Tshanglo.
- They are in stable conditions at the time of data collection and willing to participate in the study.

**Study tool**

The SF-36 is a renowned tool for measuring health-related QoL in adults. The physical, social, and role functioning scale of SF-36 tries to capture behavioral dysfunction caused by health problems. Mental health, bodily pain, and general health try to reproduce more subjective components of health and general well-being. In addition, it was also found that the SF-36 distinguishes better among different levels of health status and utilization. Hence, it was suitable to define the SF-36 as an evaluator of health-related QoL, concentrating mostly on health-related functioning and perceptions.

**Translation and Validation (Expert Panel)**

The questionnaire was adapted from the Boston Health Research Institute (BHRI) in the United States of America and contextualized to the Bhutanese setting. In physical functioning (PF01), vigorous activities such as lifting heavy objects were exemplified as lifting a bucket of water to improve the understandability of the question. In PF02, moderate activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf were replaced by sweeping the floor, circumambulation of religious monuments, prostrations, and cooking, as these activities, can be considered equivalently moderate. Climbing several flights of stairs was replaced as climbing five floors (PF04), and one flight of stairs was explained as one floor (PF05). One mile was expressed as 1.5 km (PF07), walking several hundred yards was expressed as walking more than 500 steps (PF08), and walking one hundred yards was expressed as walking 100 steps (PF09). Words like dumps, downhearted and depressed MH02, and one hundred yards was expressed as walking 100 steps (PF09). Words like dumping, downhearted and depressed MH02, and MH04 were translated suitably to capture their meaning.

The SF-36 questionnaires were translated by two bilingual individuals and these translators are native speakers of Dzongkha with excellent proficiency in English. Two individuals were Dzongkha lecturers at the Royal University of Bhutan. Once the translations were completed, inconsistencies between them were determined by a Dzongkha Development Commission Committee consisting of six members of the translation. The committee created one unified translation of the SF-36 translated into Dzongkha and further, the translated draft was reviewed by the scientific committee of the Research Ethics Board of Health (REBH) to assess the semantic equivalence of the translation in both English and Dzongkha. The pretesting study was conducted with the aim to fulfill: 1) The suitability of the survey questionnaire; 2) Feedback and suggestions for the improvement of the questionnaire. The information related to the research, including its aims and objectives, was provided to the participants.

**Study variables**

The dependent variable, QoL is assessed through the Short Form-36 (SF36) health survey questionnaire which consists of two dimensions and eight components. Independent variables are selected based on the understanding of the literature and data available in the context of the quality of life of elderly people.
The determinants of independent variables are classified into four domains such as age, gender, marital status, and education were included in the questionnaire for the quantitative study design part.

**Summary of HRQoL questionnaires**

SF-36 is composed of two dimensions measuring health: Physical Dimension (PD) and Mental Dimension (MD). Each dimension consists of 4 components.

- **PD** which emphasizes daily activities including the movement of the body, and to evaluate the range of severity of physical limitations evaluates the role of an elderly individual. It assesses the intensity of body pain and to what extent the pain affect with normal work and concerned about their perception of individual health when compared to nearby people.
- **MD** measures the feeling of Vitality, ability in social functioning, emotional balance, and psychological well-being.

**Scores and interpretation for SF36**
The score can be interpreted based on the percentage without any comparison to standard outsourcing. Therefore, the interpretation can be interpreted as:
- Poor Score 0-20
- Low Score 21-40
- Average/Fair Score 41-60
- Good Score 61-80
- Excellent Score 81-100

**Qualitative component**
Qualitative interviews explored the various facets of health and social needs associated with QOL. The data collection techniques utilized were focus group discussions (FGDs).

A focus group discussion was conducted in a community center with prior permission from the village headman discussion was scheduled on the 21st July of 2019 from 10:00 am to 11:30 am. The FGD had twelve elderly respondents from Naja, Dogar, Shaba, and Lyungni, three each from four villages with similar socio-economic backgrounds. The FGD was conducted exclusively among elderly men and women which comprised mixed genders. In the process of discussion, one of the research assistants helped with note-taking since he was good at note-taking. Before the FGD started, the objectives and informed consent were provided. All information emerging during the FGD was recorded and translated into text.

**Data analysis**
For the quantitative component, data were calculated and analyzed using the Statistical Package for Social Sciences (SPSS) version 18. Reports of QOL were scored as per the SF-36. A comparison of QoL and its eight components based on their mean scores was done against the independent variables such as age group, marital status, and education through one-way ANOVA. The QoL mean scores against genders were compared by t-test. For all tests, a significance level of 0.05 with 95% CI was used. For the qualitative data, a manual content analysis was done. All the recordings were transcribed and translated into English. The research team read the transcripts and coded common ideas, categorized and grouped them into themes. Content analysis was done by two researchers to increase the trustworthiness of the results. Text written in an Italic font in the results signifies a direct quotation from the participants.

**RESULTS**

1. **Quantitative component**
   a. **Socio-demographic characteristics**
   A total of 403 elderly people participated in the study, 233 elderly were females with the age range between 60 – 79 years. Over two hundred thirty-six (58 %) of them belong to the age group of 60 – 69 years. Two hundred eighty-six (71%) of the respondent were married.

   **Table 1. Socio-demographic characteristics of the study participants for quality of life in the elderly population in Paro, 2019 (n=403)**

<table>
<thead>
<tr>
<th>Variables</th>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 – 69</td>
<td>237</td>
<td>58.8</td>
</tr>
<tr>
<td>70 – 79</td>
<td>166</td>
<td>41.2</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>170</td>
<td>42.2</td>
</tr>
<tr>
<td>Female</td>
<td>233</td>
<td>57.8</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>21</td>
<td>5.2</td>
</tr>
<tr>
<td>Married</td>
<td>286</td>
<td>71.0</td>
</tr>
<tr>
<td>Divorced</td>
<td>21</td>
<td>5.2</td>
</tr>
<tr>
<td>Widowed</td>
<td>75</td>
<td>18.6</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No schooling</td>
<td>367</td>
<td>91.1</td>
</tr>
<tr>
<td>Primary education</td>
<td>20</td>
<td>5.0</td>
</tr>
<tr>
<td>Secondary education</td>
<td>14</td>
<td>3.4</td>
</tr>
<tr>
<td>Tertiary education</td>
<td>2</td>
<td>0.5</td>
</tr>
</tbody>
</table>

   b. **Quality of life**
   The mean score of overall QoL among the study participants was 47.84 (CI 45.87 – 49.81). It was observed that the mean of the physical dimension was lower than the mental dimension as indicated by the low level of the lower limit of the Physical dimension as shown in the table below.
Table 2. Quality of life of elderly people in Paro, Bhutan in relation to Physical and Mental dimension in 2019 (n=403)

<table>
<thead>
<tr>
<th>Measurements /variable</th>
<th>‘QOL’ Physical dimension</th>
<th>Mental dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>47.84</td>
<td>42.14</td>
</tr>
<tr>
<td>(95% CI)†</td>
<td>(45.87,49.81)</td>
<td>(39.89,44.39)</td>
</tr>
<tr>
<td></td>
<td>(51.64,55.46)</td>
<td></td>
</tr>
</tbody>
</table>

‘Quality of Life,’ ‘Confidence Interval

2. Qualitative component

To get a deeper understanding of the quality of life of the elderly population in the Paro district, a focus group discussion was conducted. The FGD lasted around 90 minutes with 12 respondents. The FGD generated diverse and meaningful perspectives. These perspectives were grouped under four themes to capture health and well-being.

Table 3. The score of eight components of SF-36 among elderly population in Paro, Bhutan in 2019 (n=403)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean (95% CI †)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functions</td>
<td>46.19 (43.47,48.91)</td>
</tr>
<tr>
<td>Role of physical</td>
<td>38.09 (34.1,42.04)</td>
</tr>
<tr>
<td>Body pain</td>
<td>52.48 (49.72,55.24)</td>
</tr>
<tr>
<td>General Health</td>
<td>31.8 (29.8,33.74)</td>
</tr>
<tr>
<td>Vitality</td>
<td>45.58 (44.20,46.96)</td>
</tr>
<tr>
<td>Social Function</td>
<td>58.68 (55.78,61.58)</td>
</tr>
<tr>
<td>Emotional balance</td>
<td>53.68 (49.81,57.55)</td>
</tr>
<tr>
<td>Mental Health</td>
<td>56.24 (54.65,57.83)</td>
</tr>
</tbody>
</table>

‘Confidence Interval

Table 4. Comparison of QoL and its determinants to the independent variables among the elderly population in Paro, Bhutan in 2019 (n=403)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Overall QoL*</th>
<th>Physical dimension</th>
<th>Mental dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean (SD†)</td>
<td>p-value</td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-69</td>
<td>237</td>
<td>50.86 (18.69)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>70-79</td>
<td>166</td>
<td>43.53 (21.39)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>170</td>
<td>51.79 (21.20)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female</td>
<td>233</td>
<td>44.96 (18.87)</td>
<td>0.001</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>21</td>
<td>52.48 (22.13)</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>286</td>
<td>49.09 (19.71)</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>21</td>
<td>45.99 (20.05)</td>
<td>0.043</td>
</tr>
<tr>
<td>Widowed</td>
<td>75</td>
<td>42.29 (20.58)</td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No schooling</td>
<td>367</td>
<td>47.31 (20.07)</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>20</td>
<td>45.49 (19.51)</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>14</td>
<td>62.61 (19.79)</td>
<td>0.02</td>
</tr>
<tr>
<td>Tertiary</td>
<td>2</td>
<td>66.28 (8.97)</td>
<td></td>
</tr>
</tbody>
</table>

‘Quality of Life,’ ‘Standard deviation
Theme 01: An emergency referral system
The common barrier to accessing medical care services was the absence of reliable transport to health centers during routine checkups as well as emergency situations. The respondent shared that the lack of such services leads to delay and discontinuity of care. Thus, transportation services as well as an effective logistics system should be planned and managed to assist those in need to access quality services in cases of emergencies, at night time, and during the weekend.

“My children are living in different parts of the country; my worry is that when I and my husband get sick it is difficult to manage transportation to see a doctor on time. Therefore, we need to have an efficient ambulance service to visit the hospital.” - (Female, 70 years, married)

Theme 02: Special care and services for older adults
They suggested several strategies to address the barriers to medical accessibility, either community-based or hospital-based levels as reflected below.

Subtheme 2.1: Geriatric clinic
Health care and service for elderly people has different component levels as reflected below.

“After waiting in queue for hours, finally they tell us, it's a disease of old age. Therefore, need to have a specialized health professional in the community health care facility to look after the older adults.” - (Male, 63 years, married)

“I am a diabetic patient and I undergo a blood test every three months. During the test, I am supposed to fast overnight but I find it very difficult! I have to wait in the queue and by the time my turn arrives, I feel weak, fatigued, and hungry!”

Subtheme 2.2- “Out of hour clinics”
The elderly people need either an hour’s service or health services during the weekend, as one advocate noted.

“The community health facilities need to be open during holidays because we never know when older people will become sick and need to attend on-call duties during the odd hours whenever the older people are sick at their home.” - (Male, 71 years, married)

Subtheme 2.3 - Long-term health monitoring
One of the themes was the need for comprehensive health services such as health screening programs, health promotion, and health education at a community level, instead of only hospitals. The participants shared how such an initiative can benefit not only themselves but to the younger generation and community members for a healthy community.

“For the benefit of the older people, we love to have three monthly screening programs on non-communicable disease and measures such as improvement in the health knowledge of the older people about potential risk factors in their community” - (Male, 69 years, divorced)

Theme 3. Family and community engagement
Family is an essential component of everyone’s life, including elderly people. The respondents shared how the changing time has resulted in drastic transitions in the approach to elderly care. In the past, elderly care was the responsibility of family members. Today, elderly people are mainly alone at home or resettles in a new place to live with their children in the cities, or nursing homes. Participants highlighted the need for the feeling of social security through the involvement of the community and social members. It will result in the feeling of connectedness to peers, neighbors, or community members, create more sense of mental well-being, and decrease social isolation.

“My children are living far away for their own work and to support their own children. They contact through phone and sometimes they do visit and stay for a while and go back to their own destination. But I prefer them to stay with us and look after the welfare all the time.” - (Female, 71 years, married)

“I personally feel that elderly people who don’t have their own children are suffering more and end up with depression as I can see in the community. Therefore, the community needs to collaborate with the stakeholders for the ways and means to look after these elderly people.” - (Male, 67 years, widowed)

Additionally, it was emphasized that to increase social and health security, the social campaign of family involvement in elderly care, enforcement by law, and regulation might be useful and beneficial to them. Few of them mentioned integrating the cultural value of Bhutan into health care services, especially voluntariness and kindness as a step towards social support.

“My worry is that in the future our children might not look after the welfare of their old parents, therefore, need to exercise certain rules and regulations to make it compulsory for the members of society to look after their aged parents.” (Male, 66 years, married)

The overview framework related to the social and health needs of the key informants is demonstrated in the figure below.
A better QoL was associated with higher level of education as compared to the primary level and no schooling, separated to culture norms which often results in limited outdoor exposure and financial barrier. Contributing to it includes quality of the marriage life. In contrary to the present study, many studies reported that married elderly had better QoL than elderly who never married, got divorced and separated. A better QoL was associated with higher level of education as compared to the primary level and no schooling, which was similar to findings from other studies conducted in India.

The research shows married elderly scored below average in QoL and physical dimension. One of the factor contributing to it includes quality of the marriage life. In contrary to the present study, many studies reported that married elderly had better QoL than elderly who never married, got divorced and separated. A better QoL was associated with higher level of education as compared to the primary level and no schooling, which was similar to findings from other studies conducted in India.

Figure 2. Conclusion framework of social and health need of Bhutanese elderly in Paro, Bhutan in 2019 (n=403)

DISCUSSION

Sociodemographic characteristic
In this study, the QoL score in elderly people aged 60-69 years was higher as compared to those age groups of 70-79 years. The result of this study findings are consistent with difference studies done in Turkish and Asian populations. As age progress, it will lower the score of QoL due to a high prevalence of comorbidities and these comorbidities will progress especially among the age between 60 to 70 years. Aging alone will compromise the physical functionality, role of pain, body pain and social function.

The finding of this study revealed that the QoL of elderly women was significantly poorer than elderly men in all four components of physical function dimension and mental component in mental dimension. This finding is consistent with those reported in other QoL studies. The reason for the lower level of QoL in elderly women may be due to a high incidence of symptoms related to anxiety and depression. In our study, women are more prone to physical disability and role limitation which leads to lower score on the subscale of physical component summary. Studies show that elderly women suffer from a high rate of psychological illnesses as compared to elderly men due to culture norms which often results in limited outdoor exposure and financial barrier.

The overall QoL mean score was 47.84 indicating the average level, a pattern that is similar to other studies. Study reported that the difference in QoL is due to 1) the complexity of the aging process and 2) contributed by many factors that affect the relationship from one to another. Additionally, factors such as economic stability, cultural background, education level, and health condition can also affect the QoL. Among the eight components, general health was scored low compared to the rest of the seven components which was different from the study done in Iran. The difference might be due to the lack of elderly-centered services in Bhutan such as nursing homes, elderly clinics, and insurance.

Health needs and social support
For elderly people, the place of residence is the main area for fulfilling their needs. The most important is the emergency referral system and geriatric care facilities within the locality, family participation in elderly care, and community participation to support other people. While priority services for the elderly are available in all the health facilities, people are not adhering to them. Hence, an awareness targeted at the public is needed. In terms of issues related to the unavailability of medications in PHCs, the SCCI (Service with Care and Compassion Initiative), which will soon be implemented in the Paro district will most likely resolve this issue. For the medical care needs, the support from the family, and institution have a great impact on the life satisfaction of elderly people. On the other hand, a lack of fulfilling these needs causes senility, feeling of rejection, and expulsion by society. Therefore, there is a need for the promotion of a new lifestyle that includes activities such as community groups, meditation, and yoga. Moreover, it must be supported by education for old age and strengthen the respect for old people.

CONCLUSIONS

The finding from this study can be concluded that the quality of life decreases with age. The QoL among the elderly female was lower compared to their male counterparts and some of the major factor contributing to this includes the high incidence of symptoms related to anxiety and depression. The QoL among married elderly are better than divorced and widow.

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AUTHORS CONTRIBUTION
Following authors have made substantial contributions to the manuscript as under:

GT: Concept, design, data collection and analysis, manuscript writing and review.

KT: Data analysis, manuscript writing and review

KO: Design, data analysis, manuscript writing and review

JP: Concept, design, data collection and analysis, manuscript writing and review.

KV: Design, data analysis, manuscript writing and review

Author agree to be accountable for all respects of the work in ensuring that questions related to the accuracy and integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST
None

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