Determinations of Self-Reported Health of Elderly People in Nepal

Mahendra Prasad Sharma, Tribhuvan University, Nepal

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Abstract

The health of the elderly has become a growing concern as the aging population increases. Self-reported health is a widely used measure of health status through individuals. This study has utilized data from Nepal Ageing Survey 2015 which is the biggest survey on aging in Nepal till now. This study includes seven major composite variables: demographic, socio-cultural, economic, support and care, modernization, living arrangement, and health-related variables. There are altogether 40 independent variables under these composite variables. Regarding the self-reported health of elderly people by differentiating along with the most significant variables the binary logistic regression analysis is used where only the 11 most significant variables are selected for the purpose of the best-fitting model. They are; age, sex, literacy status, acceptance of advice of household members, religion, working wage job, the sufficiency of property, nutrition, caring condition, enthusiasm, and medical treatment receiving status. This research has identified the major eleven factors which have a significant positive impact on elderly health based on large-scale national data for the first time in the history of Nepal. Male elderly are more likely to be in good health condition than females. Low educational attainment increases the chances of reporting poor health. Age structure, Advice accepted in the family, religion, working wage jobs, sufficient food, and property, receiving medical treatment facilities, and proper care as per the elderly interest, and enthusiasm are the major predictor variables to support the good health of elderly people.

Keywords: Nepal Ageing Survey 2015, Elderly People, Self-Reported Health

Introduction

The purpose of this study is to investigate the major determining factors of the self-reported health **(**SRH**)** of elderly people in Nepal according to major selected variables sorted from literature reviews based on Nepal Ageing Survey 2015**.** Health status is a multidimensional concept, requiring multiple indicators and multiple methodologies for adequate measurement**.** Different indicators of health status are usually included in health surveys, including single summarizing measures, questions relating to disease incidence and prevalence, and questions relating to functioning **(**physical, cognitive, emotional, and social**)** or disability **(**Stewart **&** Ware, 1992**).** SRH reflects an individual's perception of their social, biological and psychological health, and it has been linked to increased mortality risk and increased use of health services**.** SRH is an easy measure of overall health and is useful in identifying persons at risk of a decline in health and the risk of disability in older adults**.** Population ageing is one of the most significant trends of the 21st century**.** It has important and far-reaching implications in all aspects of society**.** Around the world, two persons celebrate their sixtieth birthday every second accounting for an annual total of almost 58 million sixtieth birthdays**.** With one in nine persons in the world aged 60 years or over, projected to increase to one in five by 2050, population ageing is a phenomenon that can no longer be ignored **(**UNFPA **&** HAI, 2012**).** The total elderly population of Nepal aged 60 years and above consisted of 10**.**2 percent **(**around 3 million**)** of the total population in 2021, whereas, it consisted of 9**.**1 percent **(**2**.**1 million**)** in 2011, 6**.**5 percent **(**1**.**5 million**)** in 2001 and 4**.**6 percent **(**1**.**07 million**)** of the total population in 1991**.** It shows that the number of the elderly population is increasing at more than double the rate of the total population growth **(**CBS, 2014, 2023**).** Nepal projected to entry in ageing society by 2028 but it had already entered in 2021(CBS, 2023). In addition to the increasing old age population, Nepal is in its demographic transition phase, facing various forms of social changes due to the advent of modernization, the influence of Western culture, the increasing involvement of women in side jobs, and the growth of individualism**.** The joint family system has been transforming to the nuclear family**.** The traditional values of taking care and supporting the elderly parents in their old age by the grownup children, particularly sons, are gradually changing **(**Chalise, 2012**).** The ageing of populations also suggests additional care, which is becoming a burden to families and society**.** The information on different places of residence, socio-cultural, economic, demographic, and health status of the elderly people are valuable in understanding their salient features**.**

Until recently, very little attention has been paid to the dynamics of ageing in human beings. However, the continued increase in the percentage of aged people in the population is creating humanitarian, social, economic, and demographic problems in many countries. As health is an important indicator of overall wellbeing of elderly and collecting data on health status of elderly is difficult and expensive as well. Under these circumstances, SRH may be an alternative research method to assess the health of the elderly because it is simple, short, and global (Chalise, 2007a).

Since the 1950s, SRH has been one of the maximums often used variables in gerontological and fitness studies in Western and different advanced countries. The size of SRH is usually ascertained by a single question "In general, could you assert your fitness is …?" this is rated on a five-factor Likert scale from extraordinary to poor. Past studies have proven that self-rated fitness is a useful proxy for morbidity and mortality patterns in epidemiological studies. Researchers have said that SRH has impartial results on mortality, new morbidity, practical ability, fitness care utilization, hospitalization, and recovery from illness.

Self-score has additionally, been proven to be a higher estimate of the fitness fame of the aged than expert scores finished by nurses. Self-score amongst older adults is located to be usually extra favourable than physicians' scores. This study uses self-reported health (SRH) of older persons as a proxy measure of health. SRH is widely used tool in developed countries as well (Chalise, 2007a).

The problems are also arising in developing countries like Nepal. There are several studies completed on the socio-cultural, demographic, and health situation of the ageing population in Nepal, but they are based on very small areas and data. Most of these ageing studies are based at the local district level, and they have very few respondents. Identifying the major issues of ageing at the national level with the advanced statistical applications is still lacking. The study will cover this research gap to identify determinants of the self-reported health status of older adults in Nepal.

Methods

The descriptive research design was the most common method used for this study. The data set for this study is obtained from the nationally representative Nepal Ageing Survey 2015, which is used to satisfy the research questions and objectives. A socio-economic survey of 7,200 households that included 8,626 different elderly persons aged 60 and above was conducted through structured questionnaires. The survey was conducted by the Center for Social Science Studies, Nepal under the sponsorship of the Ministry of Health and Population, Government of Nepal. The main objective of this survey was to provide in-depth and systematic information on the ageing issues of Nepal and to fulfill the data gap of the aged population. It was a national survey and data was ready to use in 2015. The qualitative data got checklist approval from MoHP. This dissertation utilized simple statistical analysis to advanced statistical tools like cross-tabulation and logistic regression analysis**.** Binary logistic regression is used to predict the odds of being a case based on the values of the independent variables (predictors).   Binomial logistic regression first calculates the odds of the event happening for different levels of each independent variable and then takes its logarithm to create a continuous criterion as a transformed version of the dependent variable. The categorical variable y, in general, can assume different values. In the simplest case scenario, y is binary meaning that it can assume either the value 0 for bad or 1 for good. In this study, we call the model **"Binomial Logistic Regression",** since the variable to predict is binary. In our analysis, we use binomial logistic regression since we have a dichotomous dependent variable.

Logistic regression is used to calculate the probability of a binary event occurring, also known as "yes" or "no" outcomes i.e., Good or Bad health status in the case of this study. In simple linear regression, the outcome variable Y is predicted from the equation:

$Y_i = b_0 + b_1X_{1i} + \varepsilon_i$
$Y_i = b_0 + b_1X_{1i} + b_2X_{2i} + b_3X_{3i} + \ldots\ldots + b_nX_{ni} + \varepsilon_{i;}$

Where, b_n is the regression coefficient of the corresponding variable X_n.

These linear models cannot be applied when the outcome variable is categorical. For the categorical outcome variables, logarithmic transformation is used (Berry &Feldman 1985). This transformation is a way of expressing a non-linear relationship in a linear way. As logistic regression is based on this principle, it expresses the multiple linear regression

equation in logarithmic terms (called the logit) and thus overcomes the problem of violating the assumption of linearity.

So, in logistic regression, instead of predicting the value of a variable Y from a predictor variable X_1 or several predictors variable X_s, we predict the probability of Y occurring given known values of X_1 (or X_s). When there are several predictor variables, as in our case, the equation becomes:

$$P(Y) = \frac{1}{1 + e^{-(b_0 + b_1 X_{1i} + b_2 X_{2i} + \ldots + b_n X_{ni})}}$$

Where, b_0 is a constant, X_1 is predictor variable (Similar with X_2, ……. X_n), b_1 is the weight attached to that predictor variable X_1 (Similar with b_2…….b_n).

This contains the multiple regression equation and expresses the equation in terms of the probability of occurrence of Y (i.e., the probability that a case belongs in a certain category). The result of the equation varies between 0 and 1. A value close to 0 means that Y is very unlikely to have occurred and a value close to 1 means that Y is very likely to have occurred. This can also be presented in several ways. It is useful when calculating probability based on given values. Also, there is another representation of the equation in pure logit multiple regression equation form;

$$logit = \log(p/1-p) = b_0 + b_1 X_{1i} + b_2 X_{2i} + \ldots + b_n X_n$$

Different representations and forms of this equation are used for this study.

The regression analysis was done using SPSS software.

This analysis comprises various significance tests, variance tests, the computing classification accuracy of the null model, the computing classification accuracy of the model with predictor variables, and the statistical significance of individual dependent variables. These tools individually contribute to finding the most significant predictor variables from a vast range of composite variables. Also, these are used to calculate the probability of a case being in the target category of the dichotomous dependent variable. These probabilities are calculated based on a pure logit regression equation for fitting the final model.

Research Framework

The framework of this study is based on theoretical as well as empirical literature reviews about elderly people. The health status of elderly people living in Nepal is considered a dependent variable for this study, which is determined by various factors. The conceptual framework of this study explains the interconnection between the health status of elderly people and their independent variables: demographic, socio-cultural, economic, spatial as well as support and care, globalization process and living arrangements. The research conducted in the past on the issues of the health status of the elderly was found lacking on using a framework based on large scale data and variables that establishes uniformity in the national and global context. It is hoped that this research helps overcome this gap. This framework specifies the following composite lists:

Demographic variables: Age, sex, marital status, and ecological region.

Socio-cultural variables: Literacy status, completed education level, religion, marriage, and other ceremonies participation status, public discussion participation status, decision-maker to expend money, the status of rising senior citizen issues, evaluation of life, voting status, acceptance of advice by household members, knowledge of security allowance and widowhood.

Economic variables: Possession of assets, annual family income, working wage job status, possession of cash status, the sufficiency of property, possession of land, and retired employee status.

Living arrangement variables: Need of other's assistant, living with whom, and better living with whom in old age.

Modernization variables: Telephone on your interest and rural-urban settlement.

Support and care variables: old age allowance status, separate room for sleeping, caring condition, feeling of freedom, enthusiasm, and medical treatment receiving status.

Health-related variables: Nutrition status, physical exercise status, tobacco using status, alcohol consumption status, and vegetarian status.
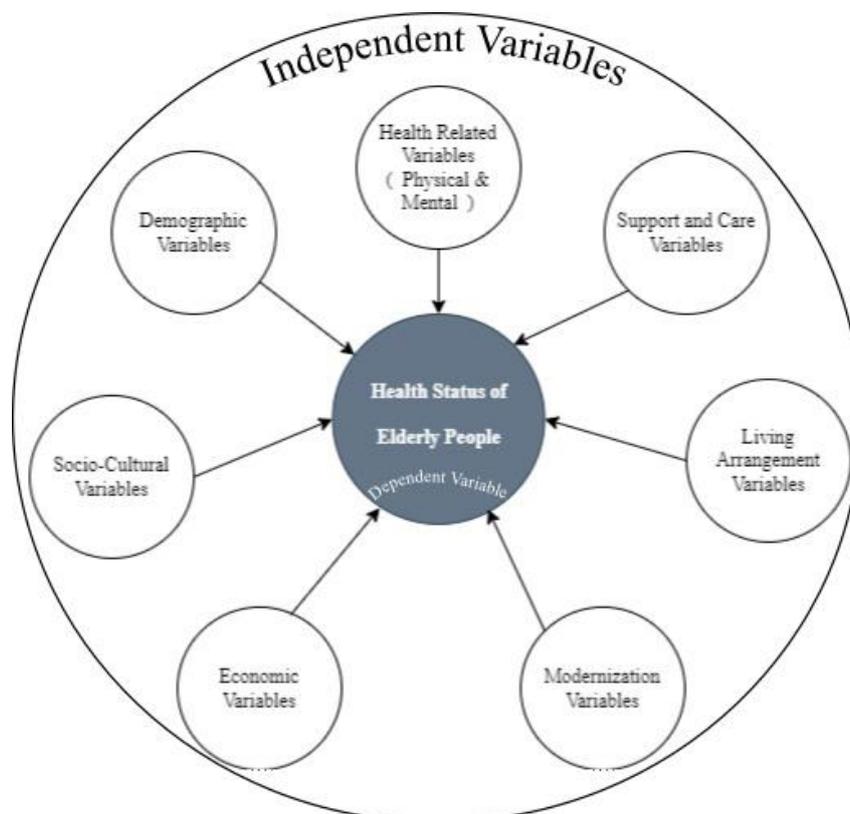
Figure 1: Conceptual Framework of the study

Results and Discussion

This study has analysed factors that influence the elderly's self-reporting of good health compared to reporting bad health. There are altogether 40 independent variables under the study. This study found 38 significant variables in the first step of the study regarding the health status of elderly people by differentiating along with most significant variables. The binary logistic regression analysis is used where only the 11 most significant variables are selected to fit the model. The results show that with increasing age people are less likely to be good health status. A study in Thailand found old age to be positively associated with poor health (Haseen F, Adhikari R, et al.,2010) due to decline in mobility and activities. The biological theories which have already been discussed also support the argument. This study finds that females are less likely to have good health status than males. Similarly, previous studies demonstrated that women were more likely to report poor self-reported health status and to have a higher prevalence and incidence of disability compared with men at older ages (Alexander Tda S, et al.,2012). Moreover, men have better self-reported health than women are in line with other studies (Leinonen R, et al.2020; Dong W, et al.,2017).

This study shows that the illiterate elderly is somewhat in good health status than literate elderly. A similar type of results was found in other studies where, low educational attainment increased the chances of reporting poor health (Krokstad et al., 2002; Mackenbach et al., 2008). A possible reason could be through lack of employment, low economic conditions, and consequential inability to take care of health care needs. In our study, most of the elderly have been found with low educational attainment, so it may help to increase the chance of reporting poor health.

This study finds that elderly people whose advice is accepted in the family have better health status than those not accepted. Similar results have been found in Ghana, where elderly people's satisfaction often relates to having children living with family members and being involved with community affairs (Apt,1993). The presence of family could have a positive effect in terms of the well-being of older person and can also provide good preventive measures against the lengthy institutional (Bowling et al.,1993). Religion is viewed by many as an assisting mechanism in organizing thoughts and actions. Maslow indicated that the religious lifestyle and peak experiences are to be valued as producing health through the impetus they give for altering possible harmful lifestyles (Bregman,1976). The study compares the Hindu religion with Buddhism, Islam, Kirati, and other religions. Only the Kirati religion are more likely to be in good health status than Hindu where the difference is positive and significant. According to Gallup (2011), 87 percent of the global population is affiliated with a religion. Results show that spiritual and religious involvement is associated with physical and mental health (Chirico, 2016; Monika, 2003). This study finds that those having working wage jobs were 3.175 more likely to be in good health status in comparison to those who did not have working wage jobs. Work and professional duties might help older adults maintain their self-esteem, connectedness and sense of belonging, which may profoundly affect their health (Palladino et al.,2016). This study reveals that a group of people having sufficient property is 2.592 times more likely to have a good health status than those very few sufficiencies. A similar study was found in Iran, where respondents in the highest income quintiles were less likely to report poor health compared to those in the middle and low income quintiles. The most elderly Iranians who were poor and lived under poor conditions with little or no earnings, perceived their health to be poor (Tajvar & Montazeri, 2008). This study exposes that those having sufficient of nutrition food were 1.640 more likely to be in good health status in comparison to those who did not have

sufficient nutrition food. Similar study found in US where there is a potential for reverse causality between food insecurity and self-reported health among elderly persons because poorer health status may contribute to food insecurity through high medical bills and higher costs for medications (Lee & Frongillo, 2001).

This study discloses that the elderly who get care in their interest are 1.53 times more likely to be in good health status in comparison to those who do not get care in their interest, having allowed for other explanatory/predictor variables. The influence or presence of family could have a positive effect in terms of the well-being of the older person and can also provide a good preventive measure against lengthy institutionalization (Bowling et al., 1993).

This study exposes that those who are receiving medical treatment are 1.628 times more likely to be in good health status in comparison to those who are not receiving any medical treatment, having allowed for other explanatory/predictor variables. Similar study found that it is essential to promote health throughout the entire lifespan of individuals to ensure their well-being in old age (Gonzalez et al., 2020).

This study suggests that the elderly who have enthusiasm or eagerness are more likely to be in good health status in comparison to those who have lesser enthusiasm, having allowed for other explanatory/predictor variables. This type of similar study has found that in subjective well-being, satisfaction with certain aspects of life was used to assess individual health state. The results showed that persons with high feelings of satisfaction were less likely to report poor health. Supportive findings in Brazil revealed a similar association (Borim, 2014., Sposito et.al., 2010).

Based on final most significant 11 predictors variables, for final prediction model, the likelihood of being in good health status for a random cases of elderlies, are calculated. We take 4 random cases where we assume 4 elderlies with their own distinct characteristics. 2 of them are elderly males and 2 elderly females. 1 male and 1 female elderly are assumed to have characteristics as the privilege or ideal life that elderly wish for in their old age, with sufficiency in care, medicine, acceptance of advice, the sufficiency of nutrition, property, high enthusiasm, and so on. Another 1 male and 1 female elderly were assumed to have the complete opposite of the earlier ones, with the least ideal conditional characteristics of elderly for the observation of difference in the likelihood of being in good health status in different cases of elderly. The model predicts a 93.09 percent and 94.12 percent likelihood of being in good health status for female and male elderly, respectively, who have ideal elderly life conditions. Similarly, for the other two least privileged, only 28.55 percent and 32.21 percent likelihood of being in good health status were predicted for female and male elderly, respectively. In addition, female elderly was found to be in a less good health status than male elderly, either in ideal or least ideal elderly living conditions.

As far as the discussion on policy responses goes, as age increases, health status decreases, so effective separate elderly age group policies are needed to address the elderly people of Nepal. Male elderly is to be more likely to be in good health condition than female where most of the proportion has occupied by widows compared to widowers so policy should be strengthening to reducing loneliness of female. Older age female care taking facilities should be strengthened. Low educational attainment also has the chances of reporting poor health so it is recommended that upcoming elderly need to improve educational status for healthy living in future. Highly appreciating and follow-up elderly advice help to increase the health status of the elderly so it should be utilized in societies of Nepal. There should be working

wage job policies toward ageing people according to their capacity. Elderly people have to be ensured with their own legally sufficient property policy so that they can feel healthy. A sufficient food security assurance policy is needed to make healthy ageing. Proper care policy toward elderly people is needed to be healthy as per their interest. Medical treatment facilities policies should be reorganized to make healthy elderly. The policy should be emphasized making the elderly more enthusiastic to increase the size of healthy ageing.

Conclusions

The result shows that an increase in age tends to less likely to be good health status. Age is seen as a significant positive predictor of self-reported health. This study finds that females are less likely to have good health status than males. Low educational attainment increases the chances of reporting poor health. In this study, most of the elderly have been found to have low educational attainment, so it may help to increase the chance of reporting poor health. This study finds that elderly people whose advice is accepted in the family have better health status than those whose advice is not valued. The presence of family could have a positive effect in terms of well-being of older person and can also provide good preventive measures. Religion would have a positive effect on functional health and the effect would increase with age. The relationship between religion and health is important because the elderly population is rapidly increasing and religion is an important factor in the lives of many elderly individuals. But it differs according to their religion's norms and values. This study finds that those elderly who have working-wage jobs are more likely to be in good health status in comparison to those who do not have working -wage jobs. This study exposes that elderly people having sufficient property are more likely to have a good health. The best is to achieve self-actualization, having met all the "lower" level needs successfully. The elderly who have enthusiasm are more likely to be in good health status in comparison to those who have lesser enthusiasm. The results show that people with high feelings of satisfaction are less likely to report poor health.

This research has identified the major eleven factors which have significant positive impact on elderly health based on large-scale national data for the first time in history. These findings have implications for government policy, strategies, and preparation on improving the self-reported health of elderly people and promoting their individual wellbeing. This suggested that self-reported health of elderly people and personal well-being may be modeled within the framework of time and space, according to earlier studies. This will allow for an evaluation and generalization of the data base on earlier scientific studies. This may also be a contribution to the UN target of SDG 2020–2030.

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Contact email: sharmamahendra993@gmail.com