Socio-Economic Determinants and Health Care Utilisation: An Examination of Low Income Households of India

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Abstract

The objective of the study is to examine the influence of socio-economic determinants on health care utilization of low income households in the Punjab state of India. The study is cross sectional study that collected 1254 low income households from various districts of Punjab. Structured questionnaire covering the factors from Andersen's Behavioral model for health care use is used to collect the responses using multistage random sampling method. Multinomial logistic regression model is used to assess the influence of predisposing, enabling and need-illness factors of health services utilisation. Findings reveal that men household heading joint family and enrolled in Government sponsored schemes is associated with health services utilisation. Respondents with educational background (9- 10 standard) prefer to visit private hospitals where as households with good health status preferred private hospitals, chemists and Government hospitals over no treatment or home treatment.

Keywords: Catastrophic Expenditures, Health Seeking Behaviour, Health Insurance Policy, Health services utilization
JEL Classification: I12, I13, I15

INTRODUCTION

Health inequality is a reflection of health disparity observed in access to health care determinants. People with low income are more vulnerable to health disparities and suffer from a greater amount of health risks(Qian et al., 2017) . In fact, vulnerable population in low and middle income countries suffers from lack of adequate health care facilities in public sector. India has implemented major health care sector reforms since its first health policy documented in 1946 to improve access to health care services and widen the choice of health care providers(Ghosh, 2014). Nonetheless, the implementation of reforms were handicapped due to lack of support and coordination of State Governments that led to the dominance of private sector in health care delivery increasing out-of-pocket expenditures to poor (Bali & Ramesh, 2015).

With 22% population falling below the poverty line in India, achieving health equity is far from realization due to rapid privatization of health care services(Chaudhuri, 2012). Understanding patterns of health service utilization can improve health care and increase use of health services(Gan-Yadam et al., 2013). Applying behavioural models of health service utilisation in different contexts helps to understand the challenges and means to improve the health status of people. For example, the behavioural model proposed byGelberg L, Andersen RM &Leake BD(Gelberg et al., 2000)has extensively been used to understand the individual and contextual determinants to examine the health services utilisation(Gelberg et al., 2000; Pandey, 2017). Most of the studies in the recent past in developing countries have explored what determines the access and health services utilization among the gender, public/private service facilities, cities, regions/counties/provinces/states, and countries(Abuduxike et al., 2020; Law et al., 2005; Roy &Chaudhuri, 2008).In addition,previous studies also explored the utilization of a health care system while investigating several socio-demographic factors, social structures, level of education, cultural beliefs and practices, gender discrimination, status of women, economic and political systems and the disease pattern(Dey&Jorm, 2017). Despite the volume of such studies, there is a dearth of such studies in India which emphasizes the low income households.

The aim of our study is to examine the influence of predisposing, enabling and need factors of Andersen's behavioural model in choosing health care services providers amongst low income households. The study addressed gaps in the literature regardingchoosing health care provider which may be presented in dimensions such as a) examine how predisposing factors added with number of sick members and number of dependents in the family b) examine how need-illness factors influence health service utilisation when catastrophic health care expenditure is added c) examine how enabling factors impact choosing health care when enrolment in Government social sector schemes, distance travelled for medical treatment and consumption in the context of low income households.

The study is unique for two reasons. First, Andersen's behavioural model is tested in a low income group with limited economic sourceshaving access to various Governments social sector schemes as compared to examining the model in disease specific conducted by most previous researchers. Second, the study provides a perspective to test the theory with an identical setting like in India with mixed culture and socio-economic conditions. Hence withadequate understanding of the authors, this study should add to the existing area of research in health seeking behaviours.

CONCEPTUAL FRAMEWORK

Andersen's Behavioral Model of Health Care Use and Hypothesis Formulation

The seminal work of Andersen's Behavioural model of health care use that explains the impact of Predisposing, enabling and need-illness factors on health seeking behaviour is an internationally accepted and reliable tool in understanding the health care services utilisation which was further extended as Gelberg-Andersen Behavioural Model for Vulnerable Populations(R. Andersen, 1968; R. M. Andersen, 1995; Freidoony et al., 2018; Gelberg et al., 2000). Numerousstudies that explored the influence of health seeking predictors used secondary data, which means primary studies are required to understand the nature of predictors in variety of settings(Adane et al., 2017; Freidoony et al., 2018; Lilienthal et al., 2017). Since Andersen Health Behaviour Model was proposed in 1968, a wide investigation has been undertaken by examining socio-demographic factors,effects of geography, psychological, social support, consumer choice and alternate therapies, distance and health care utilization, perceived health status (child, adult and mental), and insurance statusin association with health service utilization(B. L. Andersen et al., 2004; R. M. Andersen, 2008; R. Andersen & Newman, 1973; Anderson et al., 2006; Arcury et al., 2005; Babitsch et al., 2012; Bartsokas et al., 2019; Hiscock et al., 2020; Kelner& Wellman, 1997; Lu et al., 2020; Nemet& Bailey, 2000). The model talks about three major factors including pre-disposing factors, enabling factors and need& illness factors.

Pre-disposing factors
Predisposing factors are widely explained by the association between age, sex, marital status and past illness (demographic factors), education, occupation, family size, ethnicity, religion, residential, mobility (social structure), values concerning health and illness, attitudes towards health services, knowledge about diseases(R. M. Andersen, 1995; Babitsch et al., 2012; Gelberg et al., 2000). Age and gender significantly explain the variation of hospital usage (Habibov, 2010). In the context of Mongolia, married is a highly significant predictor of health care utilization (Gan-Yadam et al., 2013, p.). Domicile also plays a significant role in health care service utilization, asindividuals who do not use hospital service are likely to live in a rural area(Hamilton et al., 2017). Contrary to the above studies, there is no significant association found between utilization of health services and socio-demographic factors such as gender, education level, and age(Roy &Chaudhuri, 2008). Residence has remained significant predictors of health service utilization nationality and globally(Dias et al., 2008; Ejike et al., 2020; Moroka& Tshimanga, 2009). Recent immigrants in Canada are less likely to visit a general practitioner, but the established immigrants uses physicians services intensively(Tiagi, 2016). Occupation and educational attainment that represents the economic empowerment of family are significantly associated with the health care(Ononokpono&Odimegwu, 2014). Ethnic communities such as muslim women, and women belonged to scheduled castes, scheduled tribes, and other backward classes are less likely to avail safe delivery services (Singh et al., 2012). Family size represents the intensity of network relations manage with the social networks towards decision making. Large family size means larger the social networks followed than the smaller family size(Baker & Liu, 2006).

Enabling Factors
Access to and utilization of health services is a key for health equity and quality of life(dos Anjos Luis & Cabral, 2016). Knowing the location of service providers and coverage breadth of service providers is of utmost importance for an effective healthcare planning and utilization of services(dos Anjos Luis & Cabral, 2016; Munoz &Källest\aal, 2012). Studies pertaining to geographical barriers and their impediments on the quality health care, specifically, on rural areas are essential due to substantial mortality penalties for provider-seekers(Karra et al., 2017).Geographical and spatial behaviour factors, distance and driving license possession were significantly associated with health care utilization for both regular treatments and chronic care(Jordan et al., 2004).Poorly trained personnel, badly under-equipped and availability of hospital beds and cultural barriers subsides the geographical barriers for health care services utilization(Chavehpour et al., 2017). Poor urban, due to income inequalities forced to approach or consult cheaper, less qualified and often unregulated providers. In the context of Norway, there is negative association between income and mental health care treatment(Straiton et al., 2016). Poor treatment results towards reluctant to use services and might ignore health care during chronic illness, as well(Jongeneel-Grimen et al., 2011; Matthews et al., 2010; Zimmerman et al., 2011).

Need and Illness Factors
Need and illness factors represent one's own health status comprising mental and physical health. The impairment of any of mental and physical health condition lead to chronic health conditions and their severity is an indicator of health care utilization(Prinja et al., 2017). However, health services utilization varies according to the longevity of illness as well as surgery and availability of intensive care inside hospital(Habibov, 2010). Pain intensity, aging, and mental depression have an impact in selection of physicians; for instance, patients suffering from high pain intensity or limited pain-related disability and insomnia used physical consultations more often (Blyth et al., 2004). Similarly, Aboriginal Australians with cardiac problem face significant barriers to attend health care services resulting in sub-optimal health care(Artuso et al., 2013). In addition, while adjusting the socio-economic conditions of the people, treatment for antenatal care, pain-related disability, cardiovascular disordersand chronic diseaseshave significant association with the health care utilization(Artuso et al., 2013; Blyth et al., 2004; Rosella et al., 2014; Simkhada et al., 2008).

In the light of the literature reviewed, this study seeks to answer the contribution of the above factors to determine the health care services utilization of low income households and the study hypothesizes:

H_1:The predisposing factors have significant influence on the health services utilisation of low income households.

H_2: The enabling factors have significant influence on the health services utilisation of low income households.

H_3: The need and illness factors have significant influence on the health services utilisation of low income households.

MATERIALS AND METHODS

The study was conducted in Punjab state of India having 75.84% literacy rate with 11.3% population of below poverty line(Kumar & Singh, 2020).Cross Sectional research design was used for the purpose of this study. The study covers low income household with monthly income possessing blue and yellow rationing cards (Monthly income belowINR 5130 {1USD= 17.446 INR, PPP Exchange Rate}). Data is collected from districts with highest and lowest per capita income and density of population using official Records of the State Government of Punjab, 2012. The data is collected by using a structured questionnaire to elicit the responses with a mix of open and close ended questions. The sampling area of target group of respondents is selected based on the density of low income people residing in Punjab state, thereby following multistage random sampling technique is used to select the sample respondents. Our study focuses primarily on the individuals whose work as street hawkers, micro business-men and migrant workers in factories.

Instruments Used

Health services utilization

The dependent variable, health services utilization, is a categorical variable which examines the health seeking behaviour of low income households that takes one of values (0= no treatment/any other treatment, 1= Chemists/Pharmacists, 2= RMP/Local Doctor, 3= Hakim/Faith Healer,4= Government Hospital, 5= Private Hospital).

Predisposing factors

As suggested by Andersen's behavioural model, information on six predisposing factors were sought including age, gender, marital status, family type, domicile and number of dependents.

Need factors

Information about respondents suffering with communicable or non-communicable diseases in the last one year, in-patient or out-patient hospitalization record and spent catastrophic expenditure was collected in line with Andersen's behavioural model.

Enabling factors

Based on Andersen's behavioural model, details about enrolment in RSBY, BSSSY, ESIS, Blue &Yellow card and MNREGA was collected in addition to out-of-pocket expenditures, education profile, health insurance coverage and distance travelled from respondents.

RESULTS

Data Analysis

Descriptive details of socio-demographic characteristics of respondents and theirhealth services utilization is provided in table-1. Authors have further employed multinomial logistics regression to check the influence of all three factors on health services utilization. Respondents facing catastrophic expenditures were classified on the basis of distribution of health payments and catastrophic expenditures methodology (Xu, 2005)

Determinants of Health Care Utilization-Multinomial Logistic Regression Model

Before administering logistic regression, the assumptions of multi-collinearity were tested using Kendall tau –b correlation test. Kendall's tau – b correlation coefficient, as a non-parametric test was widely used to test the strength of the categorical variables. As per the recommendation ofHair JF, Black WC&Babin BJ, Anderson RE and Jobson JD, the Kendall's tau-b coefficient value is tested for all categorical variables and found to be satisfactory (all values are below 0.7)(Hair et al., 2013; Jobson, 2012).In addition, the Pearson correlation coefficient was also calculated to check the multi-collinearity among the continuous variables such as out-of-pocket expenses, total consumption, distance travelled, number of dependents and number of sick members in the family. The Pearson correlation coefficient values are less than 0.7 suggesting the continuous variables are also is free from multi-collinearity problem.

Table-2 represents the multinomial logistic regression results and significant explanatory variables that influence the health care service utilization of low income people of Punjab. To administer multinomial logistic regression, any other treatment methods such as homemade remedies or no treatment is taken as reference category for an outcome variable, health service utilization. The results of model fit measures reveal that the model is significant and fit (Chi-square = 1007, df= 165, p<0.001) to include the explanatory variables to explain the outcome variable. The Nagelkerke Chi-square (also called pseudo R-square) and Mc Fadden's R-square are used to evaluate to what extent the explanatory variables explain the variance in the outcome variable. The Nagelkerke Chi-square (35.9 per cent) and Mc Fadden's R –square (31.2 per cent) for the present study are found to be satisfactory (Petrucci, 2009). The results of Omnibus Likelihood Ratio tests of multinomial regression states that total consumption, out-of-pocket expenditure, education profile, family type, communicable or non-communicable diseases, catastrophic expenditure, hospitalization history (inpatient/out-patient), number of sick-members in the family, overall health status of family, distance travelled, possession of RSBY, ESIS, Yellow Card Holder and domicile of respondents are significant at p<0.01, p<0.05 and p<0.10.

The parameter estimates for predisposing factors from table-2 reveals that those male respondents who were marriedare statistically significant at p < 0.05 and prefer to visit Government hospitals for treatment and also prefer chemists and pharmacists. The results are also significant at p<0.05 for married male respondents prefer Hakim/faith healer and not given preference to private hospitals. Family type (joint family) was also significant in choosing health care services such as faith healer, government hospital and private hospital. Domicile of respondents, number of dependents, number of sick members and age of respondents are insignificant in opting health care services. While evaluating the influence of need- illness factors and health services utilisation, the results shows that respondents bear the catastrophic health care expenditure preferred to visit hakim/faith healer and the results are significant at p<0.05. Communicable/non-communicable diseases and type of hospitalization are insignificant factors for health services utilisation.

The parameter estimates pertaining to enabling factors shows the subscription of MNREGA, blue and yellow cards, ESIS and RSBY have significant influence on using regular and alternative health care services. Chemists, Government hospitals and private hospitals are significantly preferred by the respondents with good health status. Respondents with 9-10 and 11-12 educational background significantly preferred to use health care services. As the distance travelled increases, preference for using medical services is significant towards using RMP and local medical practitioner. The increased out of pocket health care expenditure significantly influenced to prefer hakim/faith healer.

DISCUSSION

The present study examines the influence of predisposing, need and enabling factors to use health care services across India (a nation with 22% population falling below poverty line).The results determine that the health services utilisation depends on the predisposing factors such as gender, marital status and family type. The study finds the significant influence of gender on the health care utilization. Married males with atleast formal education heading a joint family, the household preferred to visit the Government Hospitals, chemists, andhakim/faith healer, and rather preferring private hospital. This might be because of high medical cost burden and low income of the head of the family. In contrast, the female health care seeking behaviour is changing towards visit to private health care clinics, whereas males preferred government health care services(Kastor&Shrestha, 2018). This is justifiable as female respondents complain or of opinion that the preferring public hospitals is time consuming and doctors would not diagnose the problem carefully due to their limitation in treating a huge rush of patients in Government Hospitals(Ergler et al., 2011).The findings have clearly understated that the gender differentials still exist(Roy &Chaudhuri, 2008), and consistent with theoretical underpinning of Andersen behavioural model of health care use(R. M. Andersen, 1995). Therefore, the wide spread programmes of Ministry of Family and Health Care such as Pradhan Manti SwastyaSurakshaYojana of Government of India and Universal Health Insurance Coverage programmes are available to make them use of facilities for treatment at affordable cost.

Our results also reinforce that the health care expenditure contributes to choose health care service provider based uponthe type of disease and burden faced by household. For example,(Grover et al., 2005) evinced that the diseases like diabetes mellitus bears the higher contribution of direct cost followed by indirect cost and doctors' cost. The affordable cost of treatment, quality of treatment and proximity of health care providers were strongly associated with health care utilization(Deshmukh et al., 2017).The finding has an implication for the health care service providers to reallocate their resources for offering better treatment with affordable cost. One way of exposing the poorest quintiles for better treatment in private hospitals and public hospitals is to sensitize the households for insurance coverage and expose them to the quality preventive care to reduce the burden of diseases and retain the policy holders to the scheme(Delavallade, 2017).

The other determinant, education profile is also an important determinant in influencing the health care services utilization. The present study shows that the respondents with low education profile preferred treatment from faith healer and private hospital. As the low educated respondents visit private hospitals, they are bound to spend high burden of medical expenses. Higher the education level, understanding the intensity and problem of disease and selecting an appropriate health service provider will be appropriate. The finding is also in line with the study conducted by(Bhakta& Ganesh Kumar, 2014). According to the study, parental education directly influences the child health status, utilization of institutional health care facilities is better than uneducated parents, whether or not the facilities are available in their locality that corroborates the theory of Andersen behavioural use of health care. The health status of the household and family members is found to be the significant determinant of health care service utilization. Attaining positive health outcomes in least possible cost shall be the endeavour of any health service provider(Hall & Christian, 2017). The questions like "What shall be the intensity of treatment?" and "What shall be the cost of the treatment?" will be understood, when the health service provider and patient jointly select treatment intensity(Aizcorbe et al., 2017). The orientation and preference towards allied health services is an important contribution to prevent and manage the occurrence of chronic diseases(Foster et al., 2017). The study found insignificant association between enrolment for insurance schemes such as RSBY and BPSSYtowards health seeking behaviour. Our findings corroborate with the findings of Jowett M, Deolalikar A, & Martinsson P(Jowett et al., 2004) indicate that the insured patients are more likely to use out-patient facilities in the context of low-income countries(Jowett et al., 2004). However, in Indian context, the enrolment in RSBY has not benefitted the insured comprehensively. The enrolees in RSBY who had used the services still faced out-of-pocket expenditures at the time of hospitalization mainly because the enrolees were asked to purchase the medicine and diagnostics, due to ceiling limit of the coverage (Devadasan et al., 2013).

CONCLUSION

The study aims to study the impact of predisposing, enabling and need- illness factors of Andersen Behavioural model for health care use in health services utilisation in Indian context. Using multistage random sampling method, a total of 1254 low income households of Punjab state are interviewed. The study documents the evidence that Government hospitals, traditional healers, registered medical practitioners and chemists supported by Government sponsored schemes are the most preferred health care service providers over private hospitals. Future studies can be replicated with the addition of variables specific to culture, health care sector reforms, types of diseases and economic status.

References

Abuduxike, G., Aşut, Ö.,Vaizoğlu, S. A., & Cali, S. (2020). Health-Seeking Behaviors and its Determinants: A Facility-Based Cross-Sectional Study in the Turkish Republic of Northern Cyprus. *International Journal of Health Policy and Management*, 9(6), 240–249. https://doi.org/10.15171/ijhpm.2019.106

Adane, M., Mengistie, B., Mulat, W., Kloos, H., &Medhin, G. (2017). Utilization of health facilities and predictors of health-seeking behavior for under-five children with acute diarrhea in slums of Addis Ababa, Ethiopia: A community-based cross-sectional study. *Journal of Health Population and Nutrition*, 36, 1–12. https://doi.org/10.1186/s41043-017-0085-1

Aizcorbe, A., Baker, C., Berndt, E. R., & Cutler, D. (2017).Introduction to" Measuring and Modeling Health Care Costs". In *Measuring and Modeling Health Care Costs* (pp. 1–21). University of Chicago Press.

Andersen, B. L., Farrar, W. B., Golden-Kreutz, D. M., Glaser, R., Emery, C. F., Crespin, T. R., Shapiro, C. L., & Carson III, W. E. (2004). Psychological, behavioral, and immune changes after a psychological intervention: A clinical trial. *Journal of Clinical Oncology: Official Journal of the American Society of Clinical Oncology*, 22(17), 3570.

Andersen, R. (1968). A behavioral model of families' use of health services.*A Behavioral Model of Families' Use of Health Services.*,25.

Andersen, R. M. (1995). Revisiting the Behavioral Model and Access to Medical Care: Does it Matter? *Journal of Health and Social Behavior*, 36(1), 1–10. JSTOR. https://doi.org/10.2307/2137284

Andersen, R. M. (2008). National health surveys and the behavioral model of health services use.*Medical Care*, 46(7), 647–653.

Andersen, R., & Newman, J. F. (1973).Societal and individual determinants of medical care utilization in the United States.*The Milbank Memorial Fund Quarterly. Health and Society*, 95–124.

Anderson, E. S., Wojcik, J. R., Winett, R. A., & Williams, D. M. (2006). Social-cognitive determinants of physical activity: The influence of social support, self-efficacy, outcome expectations, and self-regulation among participants in a church-based health promotion study. *Health Psychology*, 25(4), 510.

Arcury, T. A., Gesler, W. M., Preisser, J. S., Sherman, J., Spencer, J., &Perin, J. (2005). The effects of geography and spatial behavior on health care utilization among the residents of a rural region. *Health Services Research*, 40(1), 135–156.

Artuso, S., Cargo, M., Brown, A., & Daniel, M. (2013). Factors influencing health care utilisation among Aboriginal cardiac patients in central Australia: A qualitative study. *BMC Health Services Research*, 13(1), 83.

Babitsch, B., Gohl, D., & Von Lengerke, T. (2012). Re-revisiting Andersen's Behavioral Model of Health Services Use: A systematic review of studies from 1998–2011. *GMS Psycho-Social-Medicine*, 9.

Baker, J. B., & Liu, L. (2006). The determinants of primary health care utilization: A comparison of three rural clinics in Southern Honduras. *GeoJournal*, 66(4), 295–310.

Bali, A. S., & Ramesh, M. (2015). Health care reforms in India: Getting it wrong. *Public Policy and Administration*, 30(3–4), 300–319.

Bartsokas, C., Sissouras, A., &Jelastopulu, E. (2019). Healthcare services utilisation, subjective perception of health and satisfaction with services in Patras, Greece. *Journal of Public Health*, 1–5.

Bhakta, R., & Ganesh Kumar, A. (2014).*Linkages between parental education, utilization of health care facilities and health status of children: Evidence from India*.

Blyth, F. M., March, L. M., Brnabic, A. J., & Cousins, M. J. (2004). Chronic pain and frequent use of health care. *Pain*, 111(1–2), 51–58.

Chaudhuri, A. (2012). Socio-economic inequity in health care utilization & expenditures in richer States in India.*The Indian Journal of Medical Research*, 136(3), 368.

Chavehpour, Y., Rashidian, A., Raghfar, H., Emamgholipoursefiddashti, S., &Maroofi, A. (2017). 'Seeking affluent neighbourhoods?'a time-trend analysis of geographical distribution of hospitals in the Megacity of Tehran. *Health Policy and Planning*, 32(5), 669–675.

Delavallade, C. (2017). Quality health care and willingness to pay for health insurance retention: A randomized experiment in Kolkata slums. *Health Economics*, 26(5), 619–638.

Deshmukh, S., Kalaskar, S. K., Kadam, S. B., Mote, B., Paslawar, S. K., Adhav, A. S., Thakare, B. S., &Muthuvel, T. (2017). Utilization pattern of health services for non-communicable diseases in an urban slum: A study of Turbhe stores slum in Navi Mumbai, Maharashtra, India. *International Journal of Community Medicine and Public Health*, 4(1), 139.

Devadasan, N., Seshadri, T., Trivedi, M., &Criel, B. (2013).Promoting universal financial protection: Evidence from the RashtriyaSwasthyaBimaYojana (RSBY) in Gujarat, India.*Health Research Policy and Systems*, 11(1), 29.

Dey, M., &Jorm, A. F. (2017). Social determinants of mental health service utilization in Switzerland. *International Journal of Public Health*, 62(1), 85–93.

Dias, S. F., Severo, M., & Barros, H. (2008). Determinants of health care utilization by immigrants in Portugal. *BMC Health Services Research*, 8(1), 207.

dosAnjos Luis, A., & Cabral, P. (2016). Geographic accessibility to primary healthcare centers in Mozambique. *International Journal for Equity in Health*, *15*(1), 173. https://doi.org/10.1186/s12939-016-0455-0

Ejike, C., Lartey, G., Capps, R., &Ciochetty, D. (2020).Health-seeking cultural patterns in the use of available healthcare services among refugee groups in south-central Kentucky.*International Journal of Migration, Health and Social Care*.

Ergler, C. R., Sakdapolrak, P., Bohle, H.-G., & Kearns, R. A. (2011). Entitlements to health care: Why is there a preference for private facilities among poorer residents of Chennai, India? *Social Science & Medicine*, *72*(3), 327–337.

Foster, M., Haynes, M., O'Flaherty, M., Mitchell, G., Skinner, E., & Haines, T. (2017). *Utilisation of allied health services by people with chronic disease: Differences across health insurance coverage and policy change*.

Freidoony, L., Ranabhat, C. L., Kim, C.-B., Kim, C.-S., Ahn, D.-W., &Doh, Y. A. (2018). Predisposing, enabling, and need factors associated with utilization of institutional delivery services: A community-based cross-sectional study in far-western Nepal. *Women & Health*, *58*(1), 51–71. https://doi.org/10.1080/03630242.2016.1267689

Gan-Yadam, A., Shinohara, R., Sugisawa, Y., Tanaka, E., Watanabe, T., Hirano, M., Tomisaki, E., Morita, K., Onda, Y., & Tokutake, K. (2013). Factors associated with health service utilization in Ulaanbaatar, Mongolia: A population-based survey. *Journal of Epidemiology*, *23*(5), 320–328.

Gelberg, L., Andersen, R. M., &Leake, B. D. (2000). The Behavioral Model for Vulnerable Populations: Application to medical care use and outcomes for homeless people. *Health Services Research*, *34*(6), 1273.

Ghosh, S. (2014).Health sector reforms and changes in prevalence of untreated morbidity, choice of healthcare providers among the poor and rural population in India.*International Journal of Health Policy and Management*, *2*(3), 125.

Grover, S., Avasthi, A., Bhansali, A., Chakrabarti, S., &Kulhara, P. (2005). Cost of ambulatory care of diabetes mellitus: A study from north India. *Postgraduate Medical Journal*, *81*(956), 391–395.

Habibov, N. (2010). Hospitalization in Tajikistan: Determinants of admission, length of stay, and out-of-pocket expenditures. Results of a national survey.*The International Journal of Health Planning and Management*, *25*(3), 251–269. https://doi.org/10.1002/hpm.972

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2013).Multivariate Data Analysis.In *Multivariate Data Anlaysis* (7th ed., p. 384). Pearson.

Hall, M., & Christian, B. (2017). A health-promoting community dental service in Melbourne, Victoria, Australia: Protocol for the North Richmond model of oral health care. *Australian Journal of Primary Health*, *23*(5), 407–414.

Hamilton, R., Driver, S., Noorani, S., Callender, L., Bennett, M., &Monden, K. (2017).Utilization and access to healthcare services among community-dwelling people living with spinal cord injury.*The Journal of Spinal Cord Medicine*, *40*(3), 321–328.

Hiscock, H., Mulraney, M., Efron, D., Freed, G., Coghill, D., Sciberras, E., Warren, H., & Sawyer, M. (2020). Use and predictors of health services among Australian children with mental health problems: A national prospective study. *Australian Journal of Psychology*, *72*(1), 31–40.

Jobson, J. D. (2012). *Applied multivariate data analysis: Volume II: Categorical and Multivariate Methods*. Springer Science & Business Media.

Jongeneel-Grimen, B., Droomers, M., Stronks, K., &Kunst, A. E. (2011). Migration does not enlarge inequalities in health between rich and poor neighbourhoods in The Netherlands. *Health & Place*, *17*(4), 988–995.

Jordan, H., Roderick, P., Martin, D., & Barnett, S. (2004). Distance, rurality and the need for care: Access to health services in South West England. *International Journal of Health Geographics*, *3*(1), 21.

Jowett, M., Deolalikar, A., & Martinsson, P. (2004). Health insurance and treatment seeking behaviour: Evidence from a low-income country. *Health Economics*, *13*(9), 845–857.

Karra, M., Fink, G., & Canning, D. (2017). Facility distance and child mortality: A multi-country study of health facility access, service utilization, and child health outcomes. *International Journal of Epidemiology*, *46*(3), 817–826.

Kastor, A., &Shrestha, K. P. (2018). Reassessing the gender differences in type and place of health care utilisation in India: Does the gender gap no longer exist? *Journal of Public Health*, *26*(3), 361–371.

Kelner, M., & Wellman, B. (1997). Health care and consumer choice: Medical and alternative therapies. *Social Science & Medicine*, *45*(2), 203–212.

Kumar, G., & Singh, J. (2020). Health Infrastructure Disparities in Punjab: An Inter-district Analysis. *Journal of Infrastructure Development*, *12*(1), 25–38. https://doi.org/10.1177/0974930620902311

Law, M., Wilson, K., Eyles, J., Elliott, S., Jerrett, M., Moffat, T., &Luginaah, I. (2005). Meeting health need, accessing health care: The role of neighbourhood. *Health & Place*, *11*(4), 367–377.

Lilienthal, K., Possemato, K., Funderburk, J., Wade, M., Eaker, A., &Beehler, G. P. (2017). Predisposing characteristics, enabling factors, and need as predictors of integrated behavioral health utilization. *The Journal of Behavioral Health Services & Research*, *44*(2), 263–273.

Lu, C. L., Hsu, Y. H., Su, W. L., Damayanti, N. A., Chen, C. W., Lin, Y. J., Tsai, K. S., & Li, C. Y. (2020). Urban-rural disparity of preventive healthcare utilisation among children under the universal health insurance coverage in Taiwan: A national birth cohort analysis. *Public Health*, *182*, 102–109.

Matthews, Z., Channon, A., Neal, S., Osrin, D., Madise, N., & Stones, W. (2010). Examining the "urban advantage" in maternal health care in developing countries.*PLoS Medicine*, *7*(9).

Moroka, T., & Tshimanga, M. (2009). Barriers to and Use of Health Care Services among Cross-Border Migrants in Botswana: Implications for Public Health. *International Journal of Migration, Health and Social Care*, *5*(4), 33–42. https://doi.org/10.5042/ijmhsc.2010.0230

Munoz, U. H., &Källest\aal, C. (2012).Geographical accessibility and spatial coverage modeling of the primary health care network in the Western Province of Rwanda.*International Journal of Health Geographics*, *11*(1), 40.

Nemet, G. F., & Bailey, A. J. (2000). Distance and health care utilization among the rural elderly. *Social Science & Medicine*, *50*(9), 1197–1208.

Ononokpono, D. N., &Odimegwu, C. O. (2014). Determinants of maternal health care utilization in Nigeria: A multilevel approach. *The Pan African Medical Journal*, *17*(Suppl 1).

Pandey, A. (2017). *Socioeconomic inequality in healthcare utilization and expenditure in the older population of India* [PhD Thesis].London School of Hygiene & Tropical Medicine.

Petrucci, C. J. (2009). A primer for social worker researchers on how to conduct a multinomial logistic regression.*Journal of Social Service Research*, *35*(2), 193–205.

Prinja, S., Chauhan, A. S., Karan, A., Kaur, G., & Kumar, R. (2017). Impact of publicly financed health insurance schemes on healthcare utilization and financial risk protection in India: A systematic review. *PloS One*, *12*(2).

Qian, Y., Gao, J., Zhou, Z., Yan, J., Xu, Y., Yang, X., & Li, Y. (2017). An equity analysis of health examination service utilization by women from underdeveloped areas in western China.*PloS One*, *12*(10).

Rosella, L. C., Fitzpatrick, T., Wodchis, W. P., Calzavara, A., Manson, H., &Goel, V. (2014). High-cost health care users in Ontario, Canada: Demographic, socio-economic, and health status characteristics. *BMC Health Services Research*, *14*(1), 532.

Roy, K., &Chaudhuri, A. (2008). Influence of socioeconomic status, wealth and financial empowerment on gender differences in health and healthcare utilization in later life: Evidence from India. *Social Science & Medicine*, *66*(9), 1951–1962.

Simkhada, B., Teijlingen, E. R. van, Porter, M., &Simkhada, P. (2008). Factors affecting the utilization of antenatal care in developing countries: Systematic review of the literature. *Journal of Advanced Nursing*, *61*(3), 244–260.

Singh, P. K., Rai, R. K., Alagarajan, M., & Singh, L. (2012). Determinants of maternity care services utilization among married adolescents in rural India. *PloS One*, *7*(2).

Straiton, M. L., Reneflot, A., & Diaz, E. (2016). Socioeconomic status and primary health service use for mental health problems among immigrants with short and long lengths of stay. *International Journal of Migration, Health and Social Care*, *12*(2), 85–98. https://doi.org/10.1108/IJMHSC-01-2015-0001

Tiagi, R. (2016). Access to and utilization of health care services among Canada's immigrants.*International Journal of Migration, Health and Social Care*, *12*(2), 146–156. https://doi.org/10.1108/IJMHSC-06-2014-0027

Xu, K. (2005). Distribution of health payments and catastrophic expenditures methodology.In *Distribution of health payments and catastrophic expenditures Methodology*.

Zimmerman, C., Kiss, L., &Hossain, M. (2011). Migration and health: A framework for 21st century policy-making. *PLOS Medicine*, *8*(5).

Table 1. Socio-demographic Characteristics of Respondents Vs Health Services Utilization

Nature of Respondents	Details of Respondents	Any other/ No treatment	Chemist	Government Hospital	Hakim/ Faith healer	Private Hospital	RMP/ Local Doctor	Total	Chi-Square
Gender	Female	0(0.00%)	27(2.20%)	67(5.30%)	1(0.10%)	114(9.10%)	33(2.60%)	242(19.30%)	7.244
	Male	4(0.30%)	107(8.50%)	225(17.90%)	4(0.30%)	474(37.80%)	198(15.80%)	1012(80.70%)	
Religion	Any Other	2(0.20%)	14(1.10%)	42(3.30%)	0(0.00%)	65(5.20%)	34(2.70%)	157(12.50%)	70.925*
	Christian	0(0.00%)	1(0.10%)	19(1.50%)	0(0.00%)	6(0.50%)	1(0.10%)	27(2.20%)	
	Hindu	1(0.10%)	52(4.10%)	114(9.10%)	2(0.20%)	227(18.10%)	77(6.10%)	473(37.70%	
	Muslim	0(0.00%)	2(0.20%)	19(1.50%)	1(0.10%)	19(1.50%)	3(0.20%)	44(3.50%)	
	Sikh	1(0.10%)	65(5.20%)	98(7.80%)	2(0.20%)	271(21.60%)	116(9.30%)	553(44.10%)	
Education Profile	1-5 Grade	0(0.00%)	21(1.70%)	59(4.70%)	0(0.00%)	86(6.90%)	36(2.90%)	202(16.10%)	64.96*
	11-12 Grade	2(0.20%)	8(0.60%)	22(1.80%)	0(0.00%)	45(3.60%)	13(1.00%)	90(7.20%)	
	6-8 Grade	0(0.00%)	34(2.70%)	24(1.90%)	1(0.10%)	103(8.20%)	38(3.00%)	200(15.90%)	
	9- 10 Grade	0(0.00%)	17(1.40%)	33(2.60%)	1(0.10%)	93(7.40%)	55(4.40%)	199(15.90%)	
	Graduate and Above	0(0.00%)	0(0.00%)	3(0.20%)	0(0.00%)	14(1.10%)	5(0.40%)	22(1.80%)	
	No formal Education	2(0.20%)	54(4.30%)	151(12.00%)	3(0.20%)	247(19.70%)	84(6.70%)	541 (43.10%)	
Marital Status	Married	4(0.30%)	102(8.10%)	232(18.50%)	3(0.20%)	474(37.80%)	191(15.20%)	1006(80.20%)	4.745
	Unmarried	0(0.00%)	32(2.60%)	60(4.80%)	2(0.20%)	114(9.10%)	40(3.20%	248(19.80%)	
Occupation Profile	Casual Employment (Agriculture)	0(0.00%)	14(1.10%)	47(3.70%)	1(0.10%)	105(8.40%)	33(2.60%)	200(15.90%)	229.45*
	Casual Employment (Non-agriculture)	0(0.00%)	67(5.30%)	88(7.00%)	3(0.20%)	327(26.10%)	164(13.10%)	649(51.80%)	
	Cultivation	2(0.20%)	22(1.80%)	77(6.10%)	1(0.10%)	65(5.20%)	11(0.90%)	178(14.20%)	
	Fishing	0(0.00%)	11(0.90%)	26(2.10%)	0(0.00%)	16(1.30%)	0(0.00%)	53(4.20%)	
	Forest Gatherer	0(0.00%)	2(0.20%)	20(1.60%)	0(0.00%)	9(0.70%)	3(0.20%)	34(2.70%)	
	Interest and rental income	0(0.00%)	1(0.10%)	1(0.10%)	0(0.00%)	0(0.00%)	1(0.10%)	3(0.20%)	
	Livestock	1(0.10%)	4(0.30%)	23(1.80%)	0(0.00%)	7(0.60%)	0(0.00%)	35(2.80%)	
	Own non-agricultural enterprises/ services	0(0.00%)	6(0.50%)	5(0.40%)	0(0.00%)	31(2.50%)	12(1.00%)	54(4.30%)	
	Salaried employment	1(0.10%)	7(0.60%)	5(0.40%)	0(0.00%)	28(2.20%)	7(0.60%)	48(3.80%)	
Type of Family	Joint Family	0(0.00%)	15(1.20%)	88(7.00%)	2(0.20%)	87(6.90%)	13(1.00%)	205(16.30%)	66.47*
	Nuclear Family	4(0.30%)	119(9.50%)	204(16.30%)	3(0.20%)	501(40.00%)	218(17.40%)	1049(83.70%)	
	Any Other	0(0.00%)	2(0.20%)	12(1.00%)	0(0.00%)	7(0.60%)	3(0.20%)	24(1.90%)	78.116*

Type of House	Katcha	0(0.00%)	15(1.20%)	57(4.50%)	0(0.00%)	75(6.00%)	26(2.10%)	173(13.80%)	
	Pucca	3(0.20%)	57(4.50%)	157(12.50%)	3(0.20%)	250(19.90%)	70(5.60%)	540(43.10%)	
	Semi-pucca	1(0.10%)	60(4.80%)	66(5.30%)	2(0.20%)	256(20.40%)	132(10.50%)	517(41.20%)	
Type of Disease	Communicable	1(0.10%)	45(3.60%)	106(8.50%)	5(0.40%)	192(15.30%)	80(6.40%)	429(34.20%)	
	Non-communicable	3(0.20%)	85(6.80%)	168(13.40%)	0(0.00%)	371(29.60%)	146(11.60%)	77361.60%)	17.483**
	Others	0(0.00%)	4(0.30%)	18(1.40%)	0(0.00%)	25(2.00%)	5(0.40%)	52(4.10%)	
Health Expenditure	Catastrophic	2(0.20%)	49(3.90%)	128(10.20%)	4(0.30%)	503(40.10%)	141(11.20%)	827(65.90%)	
	Non-Catastrophic	2(0.20%)	85(6.80%)	164(13.10%)	1(0.10%)	85(6.80%)	90(7.20%)	427(34.10%)	219.012*
In-patient Hospitalization History	No	4(0.30%)	131(10.40%)	238(19.00%)	5(0.40%)	462(36.80%)	226(18.00%)	1066(85.00%)	
	Yes	0(0.00%)	3(0.20%)	54(4.30%)	0(0.00%)	126(10.00%)	5(0.40%)	188(15.00%)	70.436*
Ownership of Health Insurance	No	3(0.20%)	99(7.90%)	205(16.30%)	4(0.30%)	502(40.00%)	196(15.60%)	1009(80.50%)	
	Yes	1(0.10%)	35(2.80%)	87(6.90%)	1(0.10%)	86(6.90%)	35(2.80%)	245(19.50%)	35.161*
Health Status	Average	1(0.10%)	26(2.10%)	60(4.80%)	0(0.00%)	158(12.60%)	65(5.20%)	310(24.70%)	
	Excellent	1(0.10%)	5(0.40%)	18(1.40%)	0(0.00%)	33(2.60%)	13(1.00%)	70(5.60%)	
	Good	1(0.10%)	54(4.30%)	89(7.10%)	3(0.20%)	183(14.60%)	96(7.70%)	426(34.00%)	48.685*
	Poor	1(0.10%)	47(3.70%)	119(9.50%)	2(0.20%)	184(14.70%)	57(4.50%)	410(32.70%)	
	Very Poor	0(0.00%)	2(0.20%)	6(0.50%)	0(0.00%)	30(2.40%)	0(0.00%)	38(3.00%)	
Domicile	Rural	1(0.10%)	83(6.60%)	109(8.70%)	3(0.20%)	322(25.70%)	134(10.70%)	652(52.00%)	
	Urban	3(0.20%)	51(4.10%)	183(14.60%)	2(0.20%)	266(21.20%)	97(7.70%)	602(48.00%)	36.920*
Age Group	Less than 25	1(0.10%)	9(0.70%)	18(1.40%)	0(0.00%)	39(3.10%)	10(0.80%)	77(6.10%)	
	26-35	1(0.10%)	41(3.30%)	110(8.80%)	1(0.10%)	114(9.10%)	49(3.90%)	316(25.20%)	
	36-45	1(0.10%)	39(3.10%)	85(6.80%)	1(0.10%)	176(14.00%)	85(6.80%)	387(30.90%)	58.602*
	46-55	0(0.00%)	24(1.90%)	37(3.00%)	2(0.20%)	108(8.60%)	45(3.60%)	216(17.20%)	
	More than 55	1(0.10%)	21(1.70%)	42(3.30%)	1(0.10%)	151(12.00%)	42(3.30%)	258(20.60%)	

Significant at p<0.05*, p<0.10**

Table 2. Determinants of Health Care Utilization- Multinomial Logistic Regression Coefficients

Determinants of Health Care Utilization	Chemists/Pharmacists		Government Hospital		Hakim/Faith Healer		Private Hospital		RMP/Local Doctor	
	Estimate	Odds ratio	Estimate	Odds ratio	Estimate	Odds ratio	Estimate	Odds ratio	Estimate	Odds ratio
Intercept	30.23*		34.76*		-58.66*		28.99*		-6.91*	0.00
PREDISPOSING FACTORS										
Gender: Female										

Male	7.11**	0.00	7.14**	0.00	4.97^{NS}	0.01	7.07**	0.00	6.70**	0.00
Marital Status: Unmarried										
Married	7.67**	0.00	7.55**	0.00	12.32**	0.00	-7.59**	0.00	7.33**	0.00
Family Type: Nuclear Family										
Joint Family	12.49*	266583.93	13.64*	837105.55	15.30*	0.00	13.23*	557309.3	11.97*	157316.50
Domicile: Rural										
Urban	-1.89^{NS}	0.15	-1.02^{NS}	0.36	-2.56^{NS}	0.08	-1.34^{NS}	0.26	-1.55NS	0.21
No of Dependents	-1.00^{NS}	0.37	-0.93^{NS}	0.39	-0.98^{NS}	0.38	-1.01^{NS}	0.37	-1.01NS	0.37
No of Sick Members	3.20*	0.04	3.53^{NS}	0.03	-2.94^{NS}	0.05	3.53*	0.03	3.30*	0.04
Age: Less than 25										
Above 55	-2.58^{NS}	0.08	-2.38^{NS}	0.09	1.43^{NS}	4.18	-2.36^{NS}	0.09	-2.04NS	0.13
36-45	2.21^{NS}	9.11	2.79^{NS}	16.31	3.74^{NS}	42.27	2.67^{NS}	14.40	2.93NS	18.68
26-35	8.41^{NS}	4481.61	8.60^{NS}	5412.48	11.74^{NS}	125251.57	8.64^{NS}	5666.49	8.46NS	4710.39
46-55	4.21^{NS}	67.19	4.44^{NS}	84.35	8.11^{NS}	3340.32	4.26^{NS}	71.04	4.68NS	107.79
NEED FACTORS										
Communicable/ Non-Communicable/ Others: Others										
Communicable	-0.57^{NS}	0.56	-1.41^{NS}	0.24	5.70^{NS}	297.61	-0.06^{NS}	0.94	0.05NS	1.06
Non-Communicable	-0.98^{NS}	0.38	-1.88^{NS}	0.15	-3.93^{NS}	0.02	-0.66^{NS}	0.52	-0.50NS	0.61
Hospitalized: No										
Yes	8.31^{NS}	4060.85	10.60^{NS}	39973.48	2.11^{NS}	8.28	9.82^{NS}	18479.07	8.34NS	4204.92
Catastrophic :Catastrophic										
Non-Catastrophic	-2.88^{NS}	0.06	-2.76^{NS}	0.06	16.37*	0.00	-3.28^{NS}	0.04	-3.80NS	0.02
ENABLING FACTORS										
LOGOOP	-0.48^{NS}	0.62	0.03^{NS}	1.03	-6.38**	0.00	1.51^{NS}	4.54	-0.51NS	0.60
Education: No formal Education										
1- 5 Grade	3.06^{NS}	21.41	3.50^{NS}	33.00	2.72^{NS}	0.07	3.00^{NS}	20.07	3.04NS	20.97

11- 12 Grade	7.81*	0.00	-7.76*	0.00	-15.46*	0.00	8.32*	0.00	8.20*	0.00
6- 8	7.12^{NS}	1232.12	5.95^{NS}	381.98	5.14^{NS}	171.34	6.38^{NS}	589.30	6.74NS	843.46
9- 10 Grade	3.82*	45.72	3.92*	50.45	2.87^{NS}	17.72	4.01*	55.22	4.39*	80.76
Graduate and Above	20.48*	0.00	4.44^{NS}	85.00	3.50^{NS}	33.26	5.27^{NS}	194.54	5.31NS	201.40
Health Insurance: No										
Yes	5.31^{NS}	202.41	5.33^{NS}	206.15	8.22^{NS}	3706.54	4.96^{NS}	142.27	5.05NS	155.98
Distance Travelled	-0.09^{NS}	0.91	-0.04^{NS}	0.96	-0.01NS	0.99	-0.02^{NS}	0.98	-0.11**	0.89
Health Status: Very Poor										
Average	-1.59^{NS}	0.20	-2.43^{NS}	0.09	-12.17^{NS}	0.00	-3.89^{NS}	0.02	33.77*	463.00
Excellent	-5.82^{NS}	0.00	-5.91NS	0.00	13.02*	0.00	-6.78^{NS}	0.00	29.58*	704.00
Good	5.32*	0.00	6.18**	0.00	-8.44^{NS}	0.00	7.28*	0.00	29.61*	724.00
Poor	-3.96	0.02	-4.57^{NS}	0.01	-6.00^{NS}	0.00	5.92**	0.00	30.62*	198.00
Log Consumption	2.22^{NS}	9.17	1.00^{NS}	2.71	27.43*	0.00	2.04^{NS}	7.72	2.85NS	17.37
Yes	14.23*	0.00	12.85^{NS}	0.00	21.24*	0.00	13.49*	0.00	13.03*	0.00
BPSSY: No										
Yes	-2.34^{NS}	0.10	2.69^{NS}	0.07	-12.32^{NS}	0.00	-3.04^{NS}	0.05	-2.94NS	0.05
ESIS: No										
Yes	9.06*	0.00	8.66^{NS}	0.00	12.29**	0.00	9.89*	0.00	9.76*	0.00
Blue_Card_Holder: No										
Yes	9.86^{NS}	19180.96	9.44^{NS}	12632.62	11.57**	105431.89	9.54^{NS}	13840.08	9.19NS	9837.73
Yellow_Card: No										
Yes	7.54*	1887.63	8.17*	3533.31	3.02*	20.54	5.51*	247.33	-25.98*	0.00
MNREGA_ Job_Card: No										
Yes	7.75*	2332.57	9.24*	10259.79	-1.37*	0.25	8.69*	5963.31	7.38**	1607.56

Source: Author's CalculationSignificant at p<0.01*, p<0.05**,p<0.10***, NS – Not Significant