Journal of Cardiovascular Disease Research

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

An Analysis of Family Medical History with Chronic Health Condition and Death among Elderly Population in Odisha

Nirupama Sahoo[a b] and Doleswar Bhoi[b]

Abstract

The study describes the family medical history, chronic diseases, and deaths of the particularly elderly population of Odisha. The different indicators used in this study are diseases i.e. hypertension, diabetes, heart disease, stroke, cancer with respect to age, residence, and gender of the old aged population. The chronic diseases and deaths of the old aged population are also studied corresponding to different age groups, gender, and residence of the elderly aged population. The Chi-square test is used in this study of medical family history and chronic disease and death. The paper founds, that the death of the old aged population of different age groupsis independent of their residence, age, and gender.

Keywords: Family Medical History, Chronic Health Condition, Death, Elderly Population

Background of the paper

Family members have more in common than just similar appearances. You might be able to tell that you have your father's curly hair or your mother's button nose. But it's not so obvious that your great-grandmother carries a higher risk of breast and ovarian cancer. That is why it is critical to learn about and understand your family's health/medical history. A person's family medical history is a record of health information about him or her and his or her immediate relatives. A complete record contains information about the respondent's three generations, which include children, brothers and sisters, parents, aunts and uncles, nieces and nephews, grandparents, and cousins. Many health-influencing elements are shared by families, including genes, environment, and lifestyle. These indicators, when considered together, can provide information regarding common medical issues in the family. People with a family medical history are more likely to get common conditions such as heart disease, high blood pressure, stock, certain malignancies, and diabetes. A combination of genetic factors, environmental situations, and lifestyle choices influence these complicated illnesses. Family history can also provide information on the likelihood of developing rare illnesses caused by gene mutations, such as cystic fibrosis and sickle cell anemia (LASI, 2020)

Chronic diseases, particularly degenerative non-communicable diseases (NCDs) such as cardiovascular disease, cancer, and diabetes mellitus, cause more deaths globally than all other

[a]School of Statistics, Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India

[b]Odisha Centre for Geriatric and Gerontology (OCGG), Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India

Corresponding author: Doleswar Bhoi, Odisha Centre for Geriatric and Gerontology, GangadharMeher University, Amruta Vihar, Sambalpur, Odisha, India, Email-id: doleswar.bhoi@gmail.com

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

causes combined. According to the World Health Organization's (WHO) Global Status Report on NCDs in 2014, of the 56 million global fatalities in 2012, 38 million, or 68 percent, were caused by NCDs. Cardiovascular illnesses, malignancies, chronic respiratory diseases, and diabetes account for 82% of NCD deaths (WHO 2014). The growing worldwide burden of NCDs has significant socioeconomic repercussions for low-income nations, which account for roughly three-quarters of the global burden of NCD-related morbidity (WHO 2014). With a large population, India has a relatively high prevalence of chronic disease risk factors, morbidities, and mortality (RMM). As a result, India accounts for more than 15% (5.9 million NCD fatalities) of global NCD mortality (38 million), with around 58 percent of these deaths happening before the age of 70. (WHO 2014). Importantly, early one set of NCDs is a serious worry, and previous studies have found that approximately 3-4 percent of persons (aged 20 and above) in rural areas and 8-10 percent in urban areas had coronary heart disease. (Reddy et al 2005). The high prevalence of NCDs is predicted to cost $3.55 trillion in lost economic productivity during an 18-year period from 2012 to 2030. (Mishra et al, 2016).

There are studies related to Family medical history linked with chronic disease. The purpose of Mari Anne Bogren and colleagues' (1997) study was to evaluate the prevalence of unitary incontinence among 65-year-olds in a Swedish Health Care District and to compare gender differences in medical history and psychological implications. According to the study, most women need to urinate at least twice per night, whereas men only need to urinate once per night. They construct a UI clinic at each large Primary Health Care Centre, with the goal of informing the general population that UI is a prevalent disease, that it has psychosocial effects, and that the health service can provide active rehabilitation intervention. Hiroshi Yatsuy et al. (2001) investigate a specific subtype of stomach cancer that is inherited more frequently by women from generation to generation in a gender-influenced approach. Kally A Tracy and colleagues (2008) investigate the impact of a breast cancer family history on mammography practice and beliefs. They conclude that having a family history of breast cancer influenced mammography adherence, views about the outcomes of early detection, and risk perceptions. Breast cancer death in a family may be a greater predictor of belief in breast cancer screening and cure than the disease in the family alone.

Na Li (2019) traces the history of family history in China and identifies where traditional family history falls short. It argues for a more practical approach to family history that connects personal narratives, family memories, and public history through a critical study of new family history practices. Cathleen D. Zick and colleagues (2015) investigate the relationship between personal and parental health histories and working-age persons' feelings of optimism or pessimism regarding their overall retirement chances. Retirement confidence, according to the author, is inversely associated withthe parental history of cancer and cardiovascular disease butnot witha personal health history. Retirement confidence, on the other hand, is favourably associated with the death of both parents.

Jane Claeys and colleagues (2020) investigate the relationship between a person's family history of stroke and their stroke risk among Minnesota residents attending the State Fair.

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

According to the author, 87.1 percent and 95.5 percent of people with and without a family history of stroke correctly recognised at least one stroke risk factor, respectively. Gemme Campbell-Salome and et. al. (2019) investigated the direct and indirect effects of family communicative settings on whether individuals actively collected family health history information, as well as the ways in which age and gender disparities complicate this relationship. The author's findings support the importance of family communicative settings in supporting or impeding the collection of family health histories. The study also provides practitioners with intervention points to counsel patients on the necessity of obtaining a family health history and encourage behaviours to acquire family health history information depending on the family's communicative environment.

The above literature gave a glimpse of the importance of family medical history. However, we could able to see fewer studiesthat reflect on family medical history with chronic diseases and death, particularly in the elderly population. Therefore, this paper is significant and important to understand. The paper aims to understand the relationship of family medical history with the chronic health conditions of the elderly in Odisha and; to find out the link between death and family medical history. The different indicators used in this study are diseases i.e. hypertension, diabetes, heart disease, stroke, cancer with respect to age, residence, gender of old aged population.

Elderly Population and Status of Chronic disease in Odisha

Population ageing is a human success story, a reason to celebrate the triumph of public health, medical advancements, and economic and social development over disease, accidents, and early deaths, which have historically limited human life spans. Population ageing is an unavoidable consequence of the demographic transformation that all countries are experiencing to varying degrees. According to the 2011 Census, India has over 104 million senior people, accounting for 8.6 percent of the population. By 2050, the number is predicted to rise to 315 million, accounting for 20% of the overall population. The vast majority of the elderly reside in rural areas, and the proportion of people over the age of 80 is growing. According to Health Age International's 'global age watch index,' India ranks 73rd out of 91 countries in terms of quality of life for the elderly. According to the 2011 Census, the aged make up 9.5% of the Odisha population, which is more than the national average.

In terms of health conditions in India, Odisha does not rank high. According to AHS-III data, the state ranks first among the EAG (Empowered Action Group) states in the country in terms of prevalence of disability, major and minor injury, and diabetes, among other things (Annual Health Survey, Census of India 2012-13). The prevalence rate of respiratory disease in Odisha in 2012-13 was 1134 per lakh population; the rural rate (1160 per lakh) was higher than the urban rate (1001 per lakh). In 2010-11 and 2011-12, the ARI morbidity rate was 964 per lakh population and 1252 per lakh population, respectively. Diabetes is a serious problem in Odisha. Diabetes is becoming more common, and treatment is becoming more expensive. Diabetes afflicted 604741 and 1047 people per lakh population in 2010-11, 2011-12, and 2012-13, respectively, but there is a significant disparity between rural and urban areas, which may be due

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

to the varied nature of lifestyles in the two sectors. Odisha has a high rate of hypertension, which has been growing over time. In the years 2010-11, 2011-12, and 2012-13, the rate of hypertension were 1185, 1373, and 1776 per lakh population, respectively. Urban locations have a higher risk of hypertension than rural ones, which may be ascribed to lifestyle, working conditions, living conditions, food habits, and so on. Odisha has a low TB prevalence. In 2012-13, the rate of tuberculosis was 184 per lakh population. In rural areas, 193 people per lakh were infected with tuberculosis, whereas 141 people per lakh were infected with tuberculosis in urban areas.

Data Sources and Methodology

The family medical history of a person has a great impact on the occurrence of chronic disease in the future generation of that person. It may cause chronic diseases and deaths in the next generation of people. In the case of old aged people, the family medical history is important to be studied and known so that the chronic disease should be carefully diagnosed and prevented earlier. In this paper, the interdependence of the old aged people with their age, residence, and gender are studied by using the Chi-square test. The analysis shows whether the different indicators used in this study are independent or related to each other. The data set used for this paper has been extracted from LASI, Wave 1, 2017-18. It has used only the information collected from individual interviews of Odisha.

Result

The data has been extracted from the LASI and used the Chi-square test. The different indicators used in this study are diseases i.e. hypertension, diabetes, heart disease, stroke, cancer with respect to age, residence, and gender of the old aged population. The chronic diseases and deaths of the old aged population are also studied corresponding to different age groups, gender, and residence of the elderly aged population.

Age

Age is an important criterion when analyzing the elderly population. The table-1 presented the information about the chronic disease sufferer by the age group, who have self-reported that they have a family medical history of that particular disease.

Table-1: Age wise chronic disease of old aged population

Chronic Disease	Age Group		Total
	45-59 years	60 years and above	
Hypertension	189	107	296
Diabetes	61	41	102
Heart Disease	7	4	11
Stroke	4	3	7
Cancer	8	6	14

The table-1 shows the age-wise chronic disease among the old aged population in Odisha. The chronic diseases i.e. Hypertension, Diabetes, Heart Disease, Stroke, and Cancer of the ages 45-59 years and 60 years and above are analyzed in the above table-1. Here, the number of the age

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

group of 45-59 years of disease related to Hypertension is highest i.e. 189 as compared to other diseases whereas it is 107 in the age group 60 years and above. On the other side, the number of respondentswith stroke disease inthe age group 45-59 is 4 but in the case of 60 years and above age group, the number of patients with stroke disease is 3. The total number of chronic disease respondents is 269 in the age group 45-59 years and it is 161 in 60 years and above aged group which results in a total of 430.

Table – 2: Chi-Square tests of Age wise chronic diseases among old-aged population

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.810[a]	4	.937
Likelihood Ratio	.804	4	.938
Linear-by-Linear Association	.571	1	.450
N of Valid Cases	430		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 2.62.

The table-2 indicates the Chi-Square test of chronic diseases among old aged population of Odisha. The null hypothesis shows that the disease indicators are independent of age i.e.

H_0= Indicators are independent of Age

Here, the calculated value of chi-square is greater than the tabulated value of chi-square.

So, we reject our null hypothesis at a 5% level of significance. Hence we can say that there is a difference between the level of indicators and age.

From the above analysis, we can see that most of the respondents who haveaged 45-59 years are suffering from Hypertension, Diabetes, Heart Disease, Stroke, and Cancer as compared to thoseaged 60 years and above for the given corresponding indicators.

Gender

The table-3 indicates the gender-wise family medical history of the age group of 45-49 and 60 years and above aged population in Odisha. From this table, it is found that the respondents suffering from hypertension are highest i.e. 156 in the female category of the old aged population whereas it is 149 in case of male category of the old aged population. The number of respondents which are suffered from stroke disease is 4 which shows the lowest number in the case of both male and female categories of the old aged population. The total number of respondents suffering from the disease indicators of the male and female category of the old aged population is of total 443.

Table -3: Gender wise family medical history

Chronic Disease	Gender		Total
	Male	Female	
Hypertension	149	156	305
Diabetes	50	54	104
Heart Disease	6	6	12
Stroke	4	4	8
Cancer	6	8	14

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

Table 4 reveals the chi-square test of gender-wise chronic disease indicators of old aged population in Odisha. The null hypothesis is shown below i.e.

H_0= There is no difference between indicators and Sex

From the above Chi-Square tests table we can observe that the calculated value is 0.219 which is less than our tabulated value at a 5% level of significance with 4 degrees of freedom.

So from this value, we conclude that our null hypothesis is accepted.

Hence we can say that different indicators are independent of males and females.

Table – 4: Chi-Square test of Gender wise chronic diseases among old-aged population

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.219[a]	4	.994
Likelihood Ratio	.220	4	.994
Linear-by-Linear Association	.099	1	.753
N of Valid Cases	443		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.88.

Residence

The table-5 represents the residence wise medical history of old aged population in Odisha. Here, the indicator hypertension shows highest in urban area old aged people i.e. 312 whereas 125 in rural area old aged people. The number of old aged people suffering from stroke disease is lowest in the rural areas i.e. 3 but it is maximum in the urban areas as compared to rural areas i.e. 7.

Table-5: Residence-wise medical family history

Chronic Diseases	Residence		Total
	Rural	Urban	
Hypertension	125	312	437
Diabetes	40	122	162
Heart Disease	4	14	18
Stroke	3	7	10
Cancer	6	10	16

Table – 6: Chi-Square test of Residence wise chronic diseases among old aged population

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.975[a]	4	.740
Likelihood Ratio	1.957	4	.744
Linear-by-Linear Association	.000	1	.986
N of Valid Cases	643		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 2.77.

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

Table 6 shows the chi-square test of residence-wise chronic disease among the old-aged population of Odisha. The null hypothesis is given below i.e.

H_0=There is no significant difference between Indicators and Residence

The above Chi-Square analysis test shows that the calculated value of Chi-Square is 1.975

Which is greater than the tabulated value of Chi-Square at the given level of significance. Hence in this case we can reject our Null-Hypothesis H_0. That means there is an association between of the different indicators and residence for the above data.

From the above analysis (Table-5) it is also clear that simply we can say that the respondent who has been leaving in the Urban area is found to be more for all the considering indicators as compared to the people leaving in the Rural area.

Relation among Medical family history, Chronic Disease and Death

The table-7 represents the Age and residence wise chronic disease and deaths of 60+ aged population in Odisha. The number of deaths inthe 60+ aged population is 888 in the rural area which is highest as compared to the rural area but it is 565 in urban area which shows the lowest number than that of rural area of Odisha.

Table- 7: Age- residence wise chronic disease and death of old aged population

Age	Residence		Total
	Rural	Urban	
All Ages	46	18	64
60+	888	565	1453

Table – 8: Chi-Square test of Age and Residence wise chronic diseases and deaths among old aged population

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.999[a]	1	.083		
Continuity Correction[b]	2.562	1	.109		
Likelihood Ratio	3.126	1	.077		
Fisher's Exact Test				.089	.053
Linear-by-Linear Association	2.997	1	.083		
N of Valid Cases	1517				

a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 24.60.

b. Computed only for a 2x2 table

Table-8 shows the chi-square test of Age-residence wise chronic disease and deaths of old aged population in Odisha. The null hypothesis is that:

H_0= Death rate of respondents at different ages is independent of Residence

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

In this case the calculated value of Chi-Square is less than the tabulated value of Chi-square at a 5% level of significance. Hence we can accept our Null-Hypothesis. It indicates that the death rate of the respondents of different ages is independent of their Residence.

Discussion and Conclusion

Of course, the family history has long been considered a cornerstone in care for the patient who is at elevated risk of a relatively uncommon mendelian, or single-gene, illness. Many health issues, including heart disease, colorectal cancer, breast cancer, ovarian cancer, osteoporosis, atopy or asthma, type 2 diabetes, and suicide, have been linked to family history (Guttmacher Alan E., and et al., 2004). The majority of diseases are caused by the interactions of various genes and environmental variables. Despite the complexity of these interactions, practically every patient now has access to a free, well-proven personalised genomic tool that captures many of these interactions and can serve as the foundation for individualized disease prevention (Guttmacher Alan E., and et al., 2004). Despite major gains in our understanding of the human genomes over the last decade, there are significant limits in epidemiological and analytic approaches to exploring the effects of genetic determinants of prevalent chronic diseases. Understanding the genetic variation that underpins illness vulnerability should help us better diagnose, manage, and prevent many disorders (Yoon Paulaa W. and et. al, 2002).

The study found that the number of respondentsinthe age group 45-49 is mostly suffering from chronic disease. The occurrence of chronic diseases is more in the female category of old-aged people inthe urban area. It is also concluded that most of the respondentsinthe age group 45-59 years are suffering from Hypertension, Diabetes, Heart Disease, Stroke, and Cancer as compared to the age 60 years and above for the given corresponding indicators as the null hypothesis is rejected. The different indicators of disease are independent of gender i.e. male and female category of old aged population because our null hypothesis is accepted. From this study, it is also clear that the respondents of old aged people who have been living in the urbanareas are found to be more for all the considering indicators as compared to the people living in the ruralareas. The overall analysis shows that the death of the old aged populations of different age groupsis independent of their residence. It indicates that the death rate of the respondents of the different ages is independent of their residence.

References

Bogren Mari Anne and et. al. (1997), Urinary Incontinence among a 65- year Old Swedish Population: Medical History and Psychosocial Consequences, *Nordic Journal of Nursing Research,* Vol. 17, No. 3, pp. 21-24

Campbell-Salome G.and et al., (2019), Patterns of Communicating About Family Health History: Exploring Differences in Family Types, Age, and Sex, *Health Education and Behaviour,* Vol. 46, No. 5, pp. 809-817

Claeys Jane and et al. (2020), Association between Family History of Stroke and Stroke Risk: A Community Survey, *Western Journal of Nursing Research*, Vol. 42, No. 12, pp. 1174-1181.

ISSN:0975-3583,0976-2833 VOL12,ISSUE01,2021

E Berrett-Connor and K Khaw (1984), Family history of heart attack as an independent predictor of death due to cardiovascular disease, *Circulation*, Vol. 69, No. 6, pp. 1065-1069
Kumar, S. (2022). A quest for sustainium (sustainability Premium): review of sustainable bonds. Academy of Accounting and Financial Studies Journal, Vol. 26, no.2, pp. 1-18

Allugunti V.R (2022). A machine learning model for skin disease classification using convolution neural network. International Journal of Computing, Programming and Database

Management 3(1), 141-147

Guttmacher Alan E., and et al., (2004), The Family History- More Important Than Ever, *The New England Journal of Medicine*, Retrieved from https://www.nejm.org/doi/full/10.1056/nejmsb042979

Li Na (2019), Family History in China at a Crossroads: Family Narratives, personal Memory and Public history, *Journal of Family History*, Vol. 44, No. 4, pp. 449-469

Mishra, U. and et al. (2016), Surveillance of Chronic Diseases: Challenges and Strategies for India, https://icrier.org/pdf/Working_Paper_322.pdf

NPHCE, IIPS, and MHFW, (2020), Longitudinal Ageing Study in India (LASI), Wave-1, https://www.iipsindia.ac.in/sites/default/files/LASI_India_Report_2020_compressed.pdf

Reddy KS, Shah B, Varghese C, Ramadoss A. Responding to the threat of chronic diseases in India. Lancet 2005; 366: 1744-9.

Tracy, K., Quillin, J., Wilson, D. *et al.* (2008), The impact of family history of breast cancer and cancer death on women's mammography practices and beliefs. *Genetic in Medicine*, Vol. 10, pp.621–625.

WHO, (2014), Global status report on non-communicable diseases 2010. Geneva: World Health Organization; 2014.

Yatsuya, H and et. al., (2001), Family history and the risk of stomach cancer death in Japan: Difference by age and gender, *International Journal of Cancer*, Vol. 97, No. 5, pp. 688-694

Zick, Cathleen D., and et al., (2015), Family Health Histories and Their Impact on Retirement Confidence, *Journal of Aging and Health*, Vol. 27, No. 5, pp. 775-796