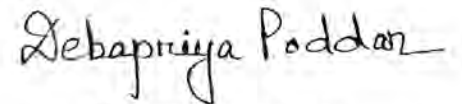




In memory Of my mother

DECLARATION

I declare that the thesis entitled **A SOCIO-ECONOMIC STUDY ON ARSENICOSIS AFFECTED INHABITANTS IN MALDAH DISTRICT, WEST BENGAL**, has been prepared by me under the guidance of Dr. Sarbari Mukhopadhaya Associate Professor of Department of Geography, Maynaguri College. No part of this thesis has formed the basis for the award of any degree or fellowship previously.



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CERTIFICATE

This is to certify that Debapriya Poddar, a research scholar of the Department of Geography & Applied Geography, University of North Bengal has carried out her Ph.D. thesis entitled ‘**A SOCIO-ECONOMIC STUDY ON ARSENICOSIS AFFECTED INHABITANTS IN MALDAH DISTRICT, WEST BENGAL**’ under my supervision which is being submitted to the University of North Bengal for the award of Doctor of Philosophy (Ph.D.) in Geography & Applied Geography under the faculty of science.

To the best of my knowledge and behalf it is his original research work based on extensive field survey and secondary sources of information done by the researcher.

This thesis as a whole or any part of it has not been submitted to any other university/Institution for any other degree.

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CHAPTER-1 INTRODUCTION

1.1. Introduction: Water is an integral part of our life. For maintaining good living standards, we need an adequate supply of non-polluted safe water.

81%

MATCHING BLOCK 1/8

W

The accessibility of safe water is also one of the most important determinants of health and

Sarbani Mukhopadhyay
20.4.23

**ASSOCIATE PROFESSOR
DEPARTMENT OF GEOGRAPHY
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PREFACE

The present study entitled, ‘**A SOCIO-ECONOMIC STUDY ON ARSENICOSIS AFFECTED INHABITANTS IN MALDAH DISTRICT, WEST BENGAL**’ makes a part of the study in social geography, in which the present researcher has tried to explain the socio-economic status of the arsenicosis inhabitants in the study area. The spatial distribution pattern of arsenic in groundwater, determinants of arsenicosis ailments, socio-economic and health impact of arsenicosis issues, current water supply system, demand of arsenic-free water, and policy implication for regular and adequate supply of arsenic-free water in the arsenic prone region have critically studied in this research work. The present study shows the arsenicosis inhabitants are willing to pay for installing the arsenic-free water supply sources at community level. This WTP (Willingness to pay) varied with some socio-economic variables such as age, sex, education status, household income, etc. Present researcher has added some recommendations for reducing the arsenicosis issues.

After outlying the objectives and significant theoretical concern and problems of the research, it may be helpful to maintain the contents of the chapters. It also provides an outline of how to designed this content in this thesis. The present research work has been arranged into seven chapters.

Chapter one, ‘Introduction’ starts with the study's basic information, such as the statement of the problem, objectives and data sources of the study, and methodologies adopted for the study. The researcher also mentioned some notable research work in the literature review associated with the investigation.

Chapter Two, “Spatial variation and causes of arsenic concentration in groundwater,” has demonstrated the spatial distribution of arsenic concentration in groundwater in different block in Maldah district. The regional and spatial distribution pattern of arsenic concentration varied significantly. The eastern part of ‘Barind’ plain does not contain a considerable amount of Arsenic (As) due to the high elevation, the nonacidic soil with a pH value of 6.8, and located far away from the margin of the Ganga River. The higher pH value, the presence of clay and silt, and the less amount of sand content in the soil of southern part of 'Tal' region are the causes of significant amount of arsenic concentration in this physiographic region. The higher percentages of clay content and a lower percentage of sand content in the Diara tract are responsible for significant amount of arsenic concentration in groundwater.

Chapter Three, “Socio-economic status of Arsenicosis inhabitants” provides the socio-economic condition of the arsenicosis inhabitants in Maldah district. Here, some significant social and economic variables like sex ratio, caste composition, education level, religious composition, occupational composition, average income, accessibility of arsenic-free water supply, health care services, etc., have been considered to identify the socio-economic status of the arsenicosis inhabitants in Maldah district. The socio-economic status of the arsenicosis inhabitants in the study area is not well. However, all income groups have suffered from this problem. Comparatively, less educated male, old respondents in the study area are more vulnerable. Moreover, the long-distance of arsenic-free water supply sources from their habitation and the irregular supply of arsenic-free water have compelled the respondents to use their tested arsenic-contaminated tube wells’ water. The victims have not continued their treatment for financial constraints, unawareness, and dissatisfaction with the present treatment facilities.

Chapter Four, entitled “Socio-economic determinants of Arsenicosis” deliberate that Arsenic toxicity is highly influenced by demographic, social and economic factors. The significant social and economic determinants of arsenicosis comprise age, sex, education status, household income, and poverty level. Health infrastructure is another crucial determinant of arsenicosis, as most of the sample respondents have suffered from the lack of any arsenic clinic, which caused to spread this issue. The prevalence of the proper knowledge, attitudes, and practices regarding groundwater arsenic contamination could significantly reduce the vulnerability of arsenic poisoning. Most of the respondents with a very high prevalence level of knowledge, attitudes, and practice concerning arsenicosis issues are literate as their perception of arsenicosis problems is remarkable. They are not influenced by some local superstitious myth about arsenicosis illness. However, respondents with low and very low prevalence levels are illiterate and belong to the very poor, poor, and lower- middle-income group. This research work shows that household income and literacy rate differ significantly across the study area. The determinants of arsenicosis differ with the variation in literacy rate and different household incomes.

Chapter Fifth, ‘Impact of arsenicosis on health and socio-economic condition of the inhabitants’ infers an overview of the impact of arsenicosis through groundwater arsenic contamination. Such effects are discussed in the health and socio-economic

perspectives. The most significant social problems in the study area are difficulties in getting married to arsenicosis victims' women, the issue of social instability, the dominance of the dowry system, preferences to remain unidentified, and the mental stress of women, etc. Contamination of arsenic in groundwater has caused economic issues for the arsenic-affected people in Maldah district, such as difficulty in getting nutritious food, difficulties in keeping the business running, the physical weakness and loss of earning capacity, the physical weakness and inability to do hard work, shrinking of job opportunities, etc. Different types of health problems have been faced by the arsenicosis patients in Maldah district, such as the occurrences of several skin-related health hazards, the impact on the immune system, the occurrences of cancer-related health hazards, the creation of tension among the human being, changes of the energy level of the human being and so on. Furthermore, a maximum mean vulnerability score of the high level of social vulnerability (0.65), high level of economic vulnerability (0.97), and high level of health vulnerability (0.78) suggested, most of the respondent have experienced a high level of vulnerability in social, economic and health perspective due to arsenicosis. Each of social, economic and health impacts are influenced by some socio-economic variables.

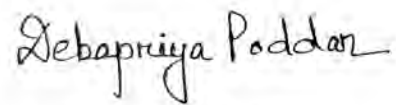
Chapter Sixth, entitled '**Present status of mitigation strategies**' deals with analysing the infrastructural status of water supply and has also tried to determine the demand of arsenic-free water for drinking and other purposes. Arsenic-free water supply in the study area is not satisfactory. Most of the study participants informed that the PHED pipeline is present in their habitation, but water supply is not available from these sources. To overcome such problem, about 61% of respondents have agreed to pay money for installing arsenic-free water supply sources at community level to acquire arsenic-free water regularly. However, about 39% of respondents have still not agreed to pay, as they have not invested their earnings for this purpose since they live below the poverty level. Most of the respondents are willing to pay in principle to secure access to arsenic safe drinking water through submersible, hand tube well, and domestic connections. The variation of WTP varies with socio-economic condition of the respondents. The socio-economic variables that significantly impact on WTP are family size, monthly household income, educational status, poverty level, presence of PHED pipeline, identification of arsenic above the permissible limit in tube well, etc. A significant relationship exists between independent variables (poverty level, family

size, education status, etc.) and WTP. The likelihood ratio chi-square of 286.288 with a p-value of 0.0001 tells us that our model as a whole is statistically significant and it fits significantly.

Finally, **Chapter Seven, “Summary & Conclusion”** of the thesis, deals with the significant findings, mitigation measures, and concluding remarks. Moreover, the researcher has focused on strategies like mass education, community health, infrastructural development, etc., to improve existing socio-economic condition.

Date 17.04.2023

Place: University of North Bengal



(Debapriya Poddar)

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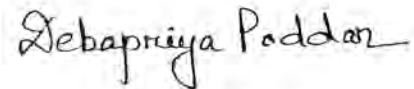
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Date: 17.04.2023

Place: University of North Bengal



(Debapriya Poddar)

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