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Determinants of conventional health services utilization
among pastoralists in Afar Region, Northeast Ethiopia

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A thesis submitted to the School of Graduate Studies,
Addis Ababa University in partial fulfilment of the degree of
Masters of Public Health

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May 2005
ADDIS ABABA
ETHIOPIA

Acknowledgments

I am indebted to my advisor, Dr Damen Haile Mariam, with deep respect. I also would like to acknowledge Professor Yemane Brihane. Their helpful suggestions, penetrating critics, unreserved effort, generous sharing of experience have substantially contributed to the improvement in the quality of this thesis document.

I wish to express my deep appreciations to Dr Demeke Assefa, Ato Fikru Enquosilassie, Dr Yohannes Wago, Dr Yenew Tezazu, Ato Mohamed Ahmed, Ato Awol Wogris, Ato Mesafint and Ato Ali Hassen for their warm accommodation, facilitation, support as well as their constructive comments through out the process of the thesis research.

My warmest thanks also goes to those data collectors, supervisors, translators, tribal leaders and focus group members for their motivated, attentive participation during data collection in very a difficult environmental situation.

I am also grateful to the World Health Organization for financing the expense of this project, to the Afar Regional Health Bureau, to the different Wereda Health Offices in Zone One, to Dubty Hospital staff and to the whole community of Dubty Wereda who participated at various steps in the conduct of this study.

Last but not least, I would like to express my deep heartfelt gratitude for my dear wife Serawit Berta for her kind motivation and appreciation during the long months of the study period.

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ABSTRACT

Sub-Saharan African countries faced with different economic, social, political, organizational and management problems they are looking for different strategies and alternative resources for health service for the last decades. In our country the devastating health condition among pastoralists obliged us to have epidemiological evidence based information with holistic approach for informed decision making.

This study was conducted with intention of weighing up and comparing the determinants of health services utilization and to develop health service utilization model for settled and mobile Afar pastoralists from August 2004 to March 2005. Different methodological approaches were used. Two independent case control studies were conducted after a survey. One on 276 mobile sub-community study subjects, of which 136 modern health utilizers and 140 non-utilizers and another on 262 settled sub-community study subjects, with 137 utilizers and 125 non-utilizers. These were triangulated with qualitative analysis (six steps of grounded theory) finding of five focus group discussions and supplemented with one year health care utilization assessment of outpatient and inpatient statistics of health facilities in Zone One of the Region.

Data were collected with structured questionnaire, which fit the variables in the modified Andersen's behavioural model and analyzed in SPSS V.10, with bivariate and multivariate logistic regression analysis of variables for the suggested model and backward step modeling of statistically significant factors for construction of the final models.

The wide-ranging health facility based study shows distance decay degradation, great discrepancy of utilization rate between town, settled and mobile pastoralist community kebeles with ratio of 227: 39: 1, very low trained health workers to population ratio (1 physician for 110,584 populations).

In the survey, mobility pattern was found to be statistically significant major determinant factor between mobile and settled communities with P value <0.01 and adjusted OR= 1.377 with 95%CI (1.138,1.667).

With the case-control studies in the final analysis of stepwise logistic regression after adjusting the effects for all other variables with P value <0.05 at 95%CI with adjusted analysis for the mobile community family relation (for Daughter/son with (OR=2.425(1.032, 5.697), economic reason (OR= .263(.070, .996)), community (OR=50.254 (4.091, 617.346) and family (OR= 84.823 (8.969, 802.213)) as source of advice for decision become statistically significant.

For the settled community, nearness or access (OR= 2.706(1.245, 5.882), and disability days before treatment (OR= 2.004(1.134, 3.540) become statistically significant. In the overall pastoralist community economic reason (OR= .432(.202, .922), mobility (OR= .242(.105, .557), family (OR= 5.841(2.986, 11.426)) and community leader (OR=6.545(2.278, 18.807) as source of advice for decision become statistically significant.

After triangulating the quantitative findings with the qualitative study, mobility pattern, consultative decision making culture of the local kinship leaders, the communal way of contributing for health care service cost and "Daggu" traditional man-to-man communication, as new additive factors to the behavioural model particular from the pastoralists' holistic view.

These objective findings will supplement in the design of the health service of the area in the extension package and grounded hypothesis will give basic theories on health seeking behaviour in pastoralist context.

INTRODUCTION

A pastoral community refers to a community whose livelihood depends-on and typically derives at least 50% of their food and income from their livestock. Nomadic communities are pastoralists with spatial mobility. Such societies have been and are found in many parts of the world, including Europe, South America, Asia and Africa. In Africa traditional production system such community is categorized according to their mobility as agro-pastoralist, sedentary pastoralist, semi-sedentary pastoralist and nomadic pastoralist. In sub-Saharan Africa their number is estimated around 50 million, out of which 20 million is found in Ethiopia, Eritrea, Djibouti, Somalia and Uganda. Mobility is key way of their dynamic life adaptation in semi-arid and arid land environment, which is conflict prone, full of uncertainty like drought, accident, insect vectors and wild life (2, 6).

Most literature on pastoralists health focuses on the physical barriers posed by spatial mobility to accessing health resources. There are four main types of mobility: 1) “Traditional” whole-household pastoral migration (with the main aim of securing grazing and water for livestock). 2) Pastoral migration carried out by men often-younger men, on their own, while the rest of the family follows a less mobile lifestyle. 3) Journeys undertaken to market livestock or livestock products, or buy cereal foods and consumer goods which are often long-distance, as marketing centers may be far from grazing lands, and generally undertaken by men alone or in groups. 4) Labour migration to non-pastoral employment, generally by men, though rarely by women, and to a limited but increasing extent by whole households (3, 6, 12, 14).

In comparison to agrarian community pastoralists in sub-Saharan Africa are known for their high mortality and morbidity pattern. The health of pastoralists, mainly the nomadic, is influenced by factors specific to their way of life. The five main factors affecting their morbidity pattern are 1, their proximity to their livestock for subsistence they are susceptible to transmissible feared zoonotic diseases, 2, problem related to a diet rich in milk, 3, mobility and dispersion with subsequent difficulty to get and maintain health, 4, factors related to their environment (hot, dry and dusty zone), 5, socio-economic and cultural factors as well as the absence of any kind of indigenous healer (6, 7, 13).

The World Health Organization before many decades declared in Alma-Ata, primary health care for all to be available, accessible, in socially acceptable and technologically feasible manner. This implies that difference in economic and social levels should not be reasons for the current tragedy of great inequality in health care utilization. This is mainly true for pastoralists in Ethiopia. They have the worst health indicators comparing to the urban and settled agrarian community (2, 5, 7).

Even in scientific terms much of the efficiency of pastoral systems the disease burden and many of the constraints of health strategies are poorly understood. In some literatures regarding recent health strategy, attributes commonly found in pastoral environments traditional extension models are said to be challenging for use in a pastoral environment. Reasons given are the physical environment and the wider socio-political situation which are largely beyond the control of either the pastoralists themselves or planned extension service, like, low population to land ratios, political instability and the less flexibility of extension services (12, 24).

It should be tried to distinguish between livestock and pastoral development at the planning stage and as the reason for attempts to enforce the settlement of nomadic peoples. Currently low population densities; poor communications and the frequent movements of nomads hamper the provision of services to pastoralists. Consequently costs are high and the objective of service provision strategy should be to provide reasonable service provision at a reasonable cost. Currently there are attempts to incorporate indigenous knowledge and problem definition into the design of such strategies (12, 24).

The World Health Organization also states that 80 % of rural community in developing countries depends on traditional medicine for their health care need, and it calls for the promotion of its practice integration to the health care system for which evidence on safety, efficacy and quality is available and generation of such evidence when it is lacking. Among African pastoralists with Pluralistic behavior indigenous medicine is often used before western medicine, and indigenous medicines will be used if what is received from a clinic fails or is perceived to be taking too long (12, 22, 28).

Setting up mobile clinics, extension program packages or encouraging the settlement of nomads does not necessarily result in improved access to health services for pastoralist community. It is necessary also to understand the social cultural and economic context of control and distribution of health resources. Studies which deal with specific selected factors, or view the health problem from specific direction or those presenting a static view of the role of social-

cultural structures and networks in the distribution of health resources are likely to be inadequate and misleading (12, 13, 37).

For the commitment of the current governors, to give appropriate emphasis to the need of the overwhelming majority but less privileged rural community with democratic principle and decentralized management and to lighten the pastoralist health problem with community based effective and appropriate intervention, there is a need to have studies which deal not only with the factors affecting health seeking behavior, but to see the dynamic nature of the determinants, from the socio-cultural context and to weigh the contribution of each to the overall health care demand and utilization (2, 10, 29).

1. BACKGROUND AND LITRATURE REVIEW

2.1 General Background

Afar is pastoral and agro-pastoral people living in the arid and semi-arid areas of Ethiopia, Eritrea and Djibouti, located in the Northeastern part of the country, stretching 278,000 sq. k/ms from the Djibouti Dire-Dawa railway in the South to the Bari-Pensile in the North and from the shores of the Red Sea to the Eastern planks of the Ethiopian plateau (2, 16).

The Ethiopian Afar inhabits the middle, the lower and part of the upper Awash valley. Afar National Regional State is one of the nine regional states of Ethiopia According to the 2002 population projection from 1996 population and Housing Census, for polio eradication program, the total population of the Afar region was 1,327,001, out of which (56.7%) were males and (43.3%) were females, with 92.2% of population living in rural as agro pastoralist and pastoralist and 7.8% living in urban areas. Of the total population, 95.6% were Muslims by religion. The regional population density is estimated to be 12 persons per km². Majority of the rural population (96.2%) is Afar speaking, while 57.8% of urban is Amharic speaking (2, 16).

The study was conducted in an area that is 600 K.M. from Addis Ababa and between 50 and 100 K. M. from the main road. It is desert and semi-desert ecological zone. It is one of the hottest areas in the region. During the conduct of the study the temperature was 37 - 44°C.

The Afar people belong to the southern Hamitic stock. Their language Afar is from the Hamitic family. The socio-political organization is based on the principle of kinship and territory. A local community lives in a cluster of 8–10 huts in one place and very scattered. Traditionally they are divided into two major groups, the Assomera (red men) and the Adomera (white men). That indicates a tradition belonging to a particular belonging division of the same family branch not skin colour. The former is the noble class the latter subordinate class. Only the ruling class or the subordinate class which have attained autonomy claim right to well-defined grazing grounds. The ruler may own herd, but not the pastures on which to graze them. They claim communally owned and managed territories, used as main clan and lineage settlement (7, 11).

Each clan has a clan leadership consisting of a clan head (called ‘Keeddo-abbia’ or ‘Makaban’ in Afar) and the leader of sanction executing body of the clan (Afar ‘Filhimma abba’ and the elders (Afar “daariiddola’). They came from the certain lineages of the clan and their position is hereditary. These leaders play significant roles in running the internal affairs of their clan, in organizing assemblies, to settle disputes according to the rules, regulations and customs of the clan. They also maintain harmonious relation within their clan and with neighbouring clans (7, 11).

The society is patriarchal which means that men are the head of the family and represent the family at all level. The responsibility of the women is grinding, food preparation, serving food, looking after goat and sheep and bearing and rearing children. They have customary laws, which bind all their people. Sheiks are powerful and influential leader. In their traditional practice it is customary for all girls to undergo circumcision and infibulation (7, 11).

Their subsistence pastoral economy depended on mobility and rigorous exploitation of natural resource that vary seasonally from place to place. The majority depends on pasturage for their livelihood. Their livestock products are source of food, clothing, and cash income and it provides vital social security and status. The availability of pasture and water, access to market and salt licks are some causes of mobility. With their wide repertoire of local knowledge and indigenous wisdom, they forecast the weather and read the sky and star positions (7, 11).

Kassa identified four mobility patterns of the community in the area. 1) Sedentary, stable or urbanized communities in Awash valley where basic services are concentrated. 2) Semi-pastoral people with restricted migratory patterns whose routine movements includes seasonal grazing in the Awash valley along the main road. 3) Relatively stable community in Imino valley and at the Southern end of the Lack Afdera where water and grazing land are available, areas most accessible by car. 4) Remote pastoral community that wonder far and wide, away from the Awash valley. Additionally cross border nomadism and sea related or coastal pastoralism were identified in Eritrea's study (7, 11).

The major sources of water for the area are rivers and ponds. Only few sources for piped water are present in the town. Owing to absence of schools in the remote areas and the existing health care facilities are not equitably distributed in the zone, it was very difficult to get interviewers and supervisors. Even the few existing social infrastructure services are poor, scattered and inappropriate. Road network and other modern means of transport are very poor. Dry weather roads of poor condition are the only road networks that interconnect rural areas with urban centers. Especially the rural areas lack modern transport. As a result, pack animals were the choice for transportation (2, 7, 16).

There were very few telephone stations and post offices in two urban centers of the Woreda. A few existing banks, insurance companies and electricity are all concentrated in those towns. So very harsh climate, shortage of food, water and severe malaria, traditional clan based socio-political organizations, poor communication and camel transportation were accommodations at the site (2, 7, 16).

They live in their traditional house ‘the make -shift hut’ It contains all the essential items needed for nomadic life. It is made of usually light materials and can be transported easily.

2.2 Literature Review

Data on coverage and utilization of health service are essential for periodical evaluation, for guidance in operation, planning of new facilities, identification of research need, and for policy makers in allocation of resource. In our country very little is known about health services utilization by nomadic pastoralist populations. Community based studies from Eritrea and Chad have found out that nomads have common cultures and traditions with settled pastoralist communities, Yet, the detection of factors influencing the health service utilization patterns typical for nomads remains an additional challenge due to the scarce knowledge about the behavior of nomad (6, 7, 8, 9, 10).

When we see studies in settled agrarian community of this country, Shamebo D. in Butajira community based cross- sectional study identified cost, transport, distance, long waiting time, gender, area of residence (urban, rural), education, occupation, religion, presence of alternative traditional medicine as major determinants of health service utilization (8). Brehane. et. al. in his qualitative and quantitative study focusing on women's health situation in Butajira

identified poverty, poor education, high work load, poor women's status and influence in decision making power as determinant factors affecting their health seeking behavior (10). Kloos H. in institution based cross-sectional study identified, distance, size and location of facility, patient preference, previous treatment satisfaction, type and cost of transportation, distribution of other health services in catchments area, patient follow up, special program and patient referral, type and duration of illness as major determinants of health care utilization (9).

Kloos H. using first visit polyclinic patient and 1984 census data, calculated utilization rates between 13.2 and 39.9 visits per 100 population were recorded for hospitals, 4 -37 for health centers and 5-33 for health stations in the same town and village. Hospital utilization rate for the same Awraja were between 0.5-5.4, rates in the remaining Awrajas in the respective region ranges from 0.02 to 1.5 with the lowest rate along the Somali, Kenya, Sudan border (9).

When we see studies from pastoralist areas, Kassa. in his community based descriptive qualitative study in six Weredas of Afar Region identified distance, lack of transport, gender, workload on females, poor knowledge, language and cultural barriers of the health services and providers as major determinants of health service utilization (11). From Eritrea, Tekeste, et. al., in a community based cross- sectional study on a mobile pastoralist community, identified health service cost, drought, war, migration, mobility of the community and ill equipped health system, poor training, linguistic, cultural, life style barrier of health workers and institutions that can not fit for complex nomadic health need as major factors of health care utilization (7). In Chad, Schelling in his community based cross- sectional study in three nomadic groups (Fulani, Arab cattle breeders and Arab camel breeders) identified distance, type of illness, age, gender, mobility, marital status, number of children, access, cost, drug availability, income, and time as major determinants of health service utilization. Distance and time were especially found to be

significantly important for nomads with long-range mobility (Arab camel and cattle breeders) (6).

Hampshire, in his community-based case control study in Chad identified strongly gendered character of information, treatment and care, among pastoralist women in Chad. Health resources were strongly gendered, what happens to a woman during a period of ill health depended on the networks available to her and on her ability to mobilize them effectively. Women without good access to husband or kin networks (unmarried women, childless women, junior wives in extended households), or good access to female support networks of friends and kin, are in a very vulnerable position. Almost exclusively men control most information and access to health treatments outside the home. Home remedies, treatment of certain reproductive health conditions, and caring/supporting roles fall within the female domain (12).

Therefore, this shows that there is great difference in determinants of health care use between settled agrarian and pastoralist communities. Studies show that economical barriers like distance, time, cost, natural disasters like drought, war, migration, socio-cultural factors like gender, mobility, social status, ethnic and linguistic marginalization and differences with service providers strongly affect health care utilization in pastoralist communities (6, 7, 12).

In our country most writings on pastoralists are based on emergency situations, just as quick fix, short cut problem solving assessments during drought, conflict and specific health programs and all were descriptive type. There are very little analytic and comparative researches with regard to health care utilization. Even if they represent an important proportion of the country population, pastoralists are poorly covered by

effective censuses. That will make it very difficult to produce reliable data. Different studies from other countries also demonstrated marked differences between different pastoralist nomadic groups in health service utilization factors, therefore, generalized conclusions should be drawn with caution (1, 13, 14).

As health service utilization is multi factorial and complex socio-psychological human behavior with major socio-cultural context, to understand its determinant factors in vague pastoralist community it is sound to go beyond descriptive methods (29,36).

Finally this study will give 1) relevant recommendations that should be considered in realization of feasible pastoralist health system with extension package 2) grounded hypothesis in the valuing of community health insurance scheme, indigenous knowledge reserve, integration of traditional medicine and 3) can be base line knowledge on pastoralist health system for further research.

2.3. Significance of the Study

According to the data released during the national review meeting for the Extended Program of immunization (at the 32nd year anniversary of the realization of the program), EPI coverage among regions with agrarian, agro-pastoralists and pastoralist communities were above 70%, above 20 % and less than 10% respectively. This shows the degree of discrepancy in program coverage between different communities of the same country (1, 2).

In Ethiopia pastoral community represent about 11% of the total population and 52 % of the country's geographic area. The area is remote with very poor infrastructure. The people are underserved in all forms of health care and are given low priority. Moreover this is exacerbated by recurrent drought, poor access, mal-distribution and poor consumption of health services with high prevalence of malnutrition, infectious and vaccine preventable diseases (2, 4, 6, 7).

According to Ministry of Health in national estimate for 2003/4 under-five mortality was 145 per 1000 child, routine EPI dropout rate was 98.89, antenatal care coverage was 25%, institutional delivery was 2.1% postnatal care was 0.26%. In basic service provision access to safe water was 7.9% excreta disposal was 9.1%. The potential health coverage by all health institutions was said to be 74.06%, patient visit per capital 0.75, percent admission of new OPD visit was 0.45 and bed occupancy rate was 7.7%. This is estimate of estimates from secondary reports between the ministries. When we see desegregated data to the different sub-population the reality is different (2, 16).

At present to ease such problems a general health service delivery strategy is being designed with extension package meant for pastoralists at national and regional levels. This future health service delivery aims at minimizing the relative responsibility of government and enhancing the role of communities, private sector and NGOs (2, 16).

The health status of pastoralists in Ethiopia is not well documented. Available data are very few and most are institution based and are deficient to provide strong population based epidemiological evidence on health situation of pastoralists (1, 2, 4).

The study conducted by Kassa G. in the area was with qualitative study design that covers a wide area to assess social organization, settlement, mobility, animal resources, animal and human health problems, traditional and modern practices including water, education and market facilities. It aims at introducing pastoralist centered health delivery system in the region. In this study we aims at specifically on health seeking behaviors and health service utilization determinants. It further developed models on health service demand behavior in settled and mobile pastoralist communities independently to spot determinants factors in the dynamic pastoralist socio-cultural setting by using qualitative

and quantitative analytic epidemiological methodology, to help policy makers to devise feasible strategy and for evidence based decision in such very complex and resource scarce parts of the country.

3. OBJECTIVES

3.1. General Objective

To compare the level of utilization of health services between settled and nomadic communities and to identify the determinant factors in Zone 1 of Afar region.

3.2. Specific Objectives

1. To evaluate one-year utilization of different health programs in zone one of Afar region.
2. To determine health service utilization rate disaggregating by town settled and nomadic sub-communities kebeles in the zone.
3. To determine perceived morbidity level among settled and nomadic communities of Zone 1 of Afar region.
4. To identify the determinant factors of health services utilization among settled and nomadic communities of Zone 1 of Afar region
5. To developed models on health service demand behavior in settled, mobile and overall pastoralist communities independently to spot determinants factors in the dynamic pastoralist socio-cultural setting.

4. RESEARCH METHODOLOGY

4.1. Study Design

This study utilizes both qualitative and quantitative designs. A case control design for quantitative and focus group discussion for qualitative methods were used.

4.1.1. Qualitative method

To grip the maximum benefit of group interaction in socio-cultural issues that impinge on health care utilization five focus group discussions were conducted following the six ladder steps of grounded theory approach on selected informants from Dubti Wereda of the zone one.

1) Data collection

Before the conduct of focus group discussion, frequent contacts were made with some study group members that helped to develop open, truthful, comfortable and cultural warm relationship. Additionally this helped to maximize observations from the perspectives of insiders as well as outsider.

We used snowball sampling technique in which once an informant was found it was used to locate others, following purposeful stratified homogenous sampling technique. The group contained homogenous members in sex and age but from different kebeles of the Wereda with native Afar local clan residents except the fifth group which contains senior health professionals (physicians and pharmacists with more than 4 years experience), so that different groups represent different social class to signify range of variation to the research questions and theoretical image of the source population. Thus the first group was taken from traditional birth attendants, the second from female group, and the third from male group who were not traditional leaders, the fourth from traditional clan leaders, and the fifth from senior health professionals working in the health facilities and health bureau. Each group contained 6-7 members. The members of the group were selected using structured

screening questionnaire formats with screening norms. People showing up by themselves were not admitted. Informed consent was taken with prepared format, confidentiality issues were discussed. For the group discussions topic guides were prepared in Amharic language.

The group discussions were conducted using “Afarigna” local language with interpreters. All the group discussions were tape-recorded (even if some were reactive) and some pictures were taken. Saturation and redundancy of information though imprecise were used to edge the discussion.

2) Documentations

In the field discussion summary were written in Amharic with references to the themes that were formulated initially to drop concepts that reach redundancy, and to come up with ideas that should be raised or clarified in the next group discussion for ongoing analysis and modification of the study proceedings. With repeated reading, imagining, and hearing the recorded sounds to remember the deep and relevant thought feelings and concepts of the participants each focus group discussions were transcribed from tapes with translator to Amharic language then to English language. Then it was written on word directory files and entered to Open code qualitative research analysis software program.

3) Open coding

The documents were transcribed by writing down codes aiming at characterizing important information in the material, to verify ideas on the health care utilization issues from the socio cultural context in thematic way. From the discussion the wording of the participants, their facial expression as well as reluctance and frustration, in addressing certain topic of discussion were included in the data coding and subsequent analysis.

4) Selective coding

After the open code the coded documents were cleared and entered back to open code for selective coding and data reduction. By continuous comparison between the codes further qualitative analysis

were done by concentrating on relevant concepts, vocabularies, phrases, and proverbs even if such were difficult in translation. Those, which were found most important, related to the research questions were selected and recoded to cluster the concepts, and transfer to categories.

5) Theoretical coding and generating hypothesis

For core category health care utilization (HCU) in pastoralist community of Afar zone one different categories were identified. For the categories properties and dimension were elaborated. Axes between categories and concepts were identified and theoretical model were formed using theoretical coding families like strategic families, process families and six C's families. Concepts and hypothesis were constructed. Then the findings were used for identifying and verifying variables for the quantitative study, for clarification or illumination of association between variables in the study and for description of social mechanisms and for verifying the very complex connection between contextual property and individual behavioral prototype in the study with hypothesis by fitting to the behavioral model.

4.1.2. Quantitative method

1). Institution based secondary data: -

In this part 93,541 Outpatient statistics of two hospitals, 3 health centers and 16 government clinics and 1 private clinic 1197 antenatal care attendants of one health center, 1056 family planning accepters, 207 delivery attendants and 1789 total inpatient admission from one hospital were collected. Of which 60,799 Outpatient statistics of two hospitals, 3 health centers and 1 government clinic, 1197 antenatal care attendants of one health center, 1056 family planning accepters, 207 delivery attendants of one health center and 1789 total inpatient admission from one hospital were analyzed in Afar zone one 6 Weredas.

2). Household survey

Case control analysis was done to identify the determinant factors for health service utilization on the mobile and the settled community independently with the following hypothesis.

Hypothesis 1. The amount of modern, non-modern health service used in the families of mobile and settled communities is different.

Hypothesis 2. The amount of modern health service used by sick individuals of mobile and settled communities will be function of predisposing, enabling, need component of the model.

Hypothesis 3. The contribution of the component of the model will be different for sick individuals of modern, non-modern health service use in mobile and settled communities.

Source population

All members of the community of zone one were source population of this study.

Study population

To get eligible study subjects for the case control study community survey were done.

Sample size

Using, Stat-calc of EPI-INFO 6.04 for sample size determination for single-population proportions, confidence level of 95%, power of 80%, from previous study taking 83.4% community as pastoralist the minimum sample size become 246 and considering at the zone and woreda level X2 and expecting contingency of 10% final minimal sample size becomes 542.

But for more reliable result we took 702 households for the survey. From the total surveyed households with the criteria of illness in the last six months for at least three disability days, a total of 1766 eligible individuals were found. From those eligible a total of 538 study subjects (cases and controls) were selected in the two sub-community of the area with the following operational case definition.

Cases: - those members who were ill in the last six months with at least three disability days and utilized modern health care for a particular single episode of illness.

Controls: - those members who were ill in the last six months with at least three disability days utilize traditional health service system or no treatment for a particular single episode of illness in the neighborhood were taken as a control group

In instance of cases and control of less than 14 years, the mother and the household head responded for the questioners so that the study could also address issues of the young age group.

Mobile sub-community is member of the community who had moved with his family and house in the last one and half years at least once.

Settled sub-community is member of the community who had not moved with his family and house in the last one and half years at least once.

Inclusion criteria

- 1) Those members who lived with the community for six months.
- 2) Those members who were ill at least for three days with illness that is sever enough to restrict the subject from his ritual duty or work.
- 3) Only one member from the family and volunteers

Exclusion criteria

- 1) Those members who did not lived with the community for six months.
- 2) Those members who were ill for less than three days with mild illness and those who were ill with chronic illness for long time more than two months.

Sample size

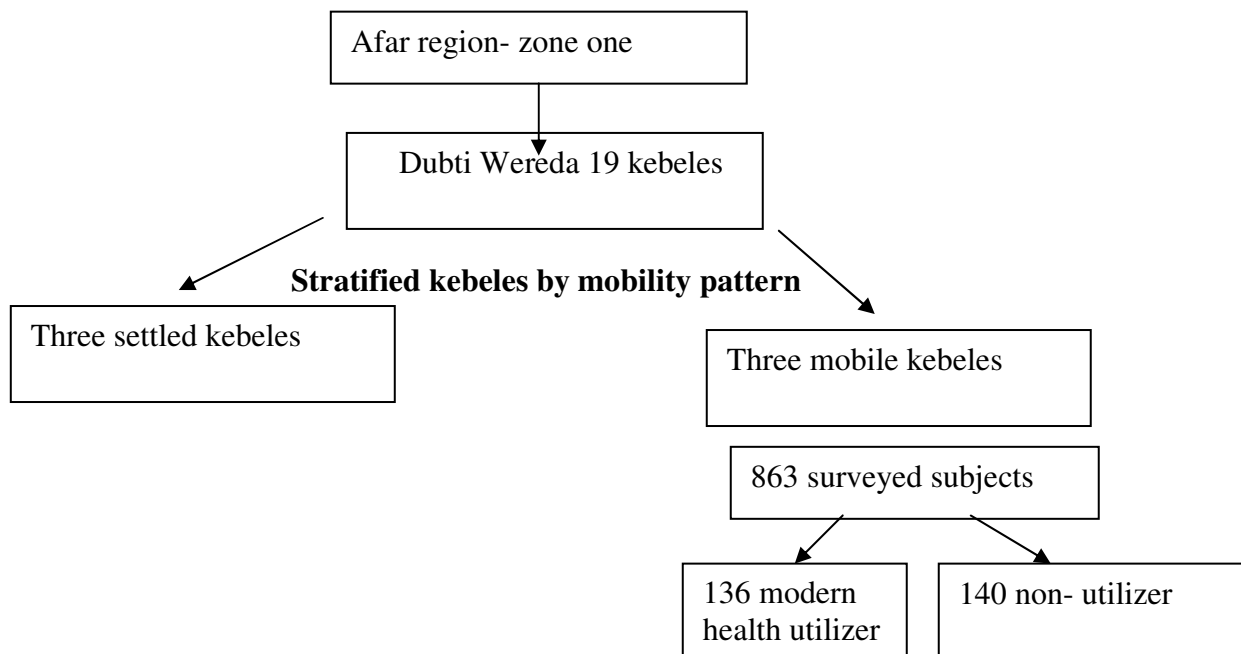
Using, Statcalc of EPI-INFO 6.04 for sample size determination for two-population proportions, confidence level of 95%, power of 80% were chosen, case to control ratio of 1:1 and expecting to get 20% difference for determinant factor of unknown (education level) among controls a sample size of 206(103 cases and 103 controls) in settled and another 206(103 cases and 103 controls) in mobile communities were determined to be

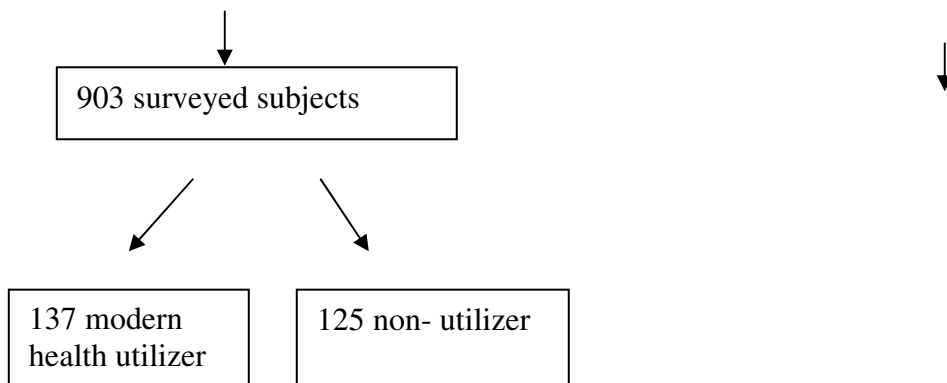
adequate. But for more valid result we took 276(136 cases and 140 controls) from the mobile and 262(137 cases and 125 controls) from settled sub community.

Sampling procedure

From six Weredas of the Zone One Afar Region Dubty Wereda was selected which had both settled pastoralist as well as mobile pastoralist communities reflecting the diverse geographic, socio-cultural and poor economic setting of the area. From the Wereda by consultation with the Wereda counsel and local tribal leaders the rural kebeles were stratified according to their mobility pattern. From the total nineteen kebeles six rural kebeles clusters were selected of which three kebeles with settled communities and three kebeles with mobile communities by their accessibility, so that complete and reliable information can be found. In each selected kebele survey was done.

Figure 1 Sampling procedure





4.2. Data Collection Procedure

For the institution-based assessment of the current utilization rate and mapping from all the health institution of the zone secondary data were collected using checklists for patient record review administrative record review.

For the case-control community based study, data collection was done using structured questionnaire for interview. The questionnaire were prepared in English, translated into Amharic language and then translated back into English by experts in the field to check for consistency. Pre-testing of the questionnaire for understandability and revising the questioners were done on 40 households similar to the study subjects but different from the actual data collection sites.

Questioners were administered with 10 interviewers who completed tenth and twelve-grade education from the locality tribe, “Dala”. They were able to write and understand well Afar and Amharic language writings. Their responsibilities were to interview subjects and fill questioners. Supervisors were three nurses from the local hospital with adequate knowledge of the locality. There were four days training with training guide, demonstration and practice on proper data collection technique. Data collectors were supervised with three nurses from the

local health facility and with the principal investigator. Data checking were done at the end of the day with discussion about the proceedings.

4.3. Study Variables

Modeling in this study refers as a decision analytic tool & the logical specification of anticipated interrelationship between certain characteristics of an individual, kinship or geographic area in utilization of health care. The critical evaluation of the modeling process has been the subject of increasing attention in recent years. There are two criteria's to choose appropriate modeling for application in such type of study. Those are flexibility and analytic input (29, 36).

From those models we choose Andersen behavioral model. It is because one, it helps the analysis of such factors at the individual level, and the influence of the family on the individual health and illness behaviors and the interaction of family members reflected in family utilization rate. Two, it is flexible to analysis factors using individual and geographic area as unit of analysis for community including pastoralist community like this. Three, it is already tested in our country to analyze health care utilization from socio cultural context with modification (29, 36).

As health care utilization is multifarious and complex human behavior with major social cultural framework we tried to appreciate the determinant factors in the Modified Andersen's behavioral model. In this analytic study from the model the three subcomponents predisposing enabling and need factors were examined in the two-sub populations and those found significant were considered for developing the final model.

In the predisposing factors; - a) family composition (sex, age, family size, marital status, family relation) were examined. b) Social structure (traditional medicine and mobility pattern) was

examined. c) Health belief (value to modern health care were examined using some factors like why they choose the modality of relief, how they rate the payment for the treatment. Value to modern health care strategies were examined using some factors like their response the importance of mobile health care, training of traditional birth attendants, and collaboration of human health care with animal health care).

In the Enabling factors; - a) family resource variables (like from the social context of the pastoralists the number of sheep, goat, cattle, camel, they posses at the single family level and amount of monthly birr they can get from other sources (as proxy indicators), education, occupation, option for having free treatment access) were examined. b) Community resources were examined using some factors (like access how they went to the health care, the hours spent on the way, the money spent on treatment and transport, who covered the expense of treatment, who gave decision, where they got information on health, who attended the last delivery).

In the Need factors: - a) Illness was examined using variables like (symptoms illness type from the local context, disability days before the specific health service utilization during the course of illness.

4.4. Data Analysis Procedure

Data for the survey and case control study were entered and cleaned in EPI-INFO V.3.2.2, 2002 and were exported to SPSS V.10.

- Description with central tendency and variation to summarize data. For some variables since the distribution were skewed median were used to form category.
- Regression: - utilizing Bivariate, multivariate logistic regression analysis on the variables in the model used to see the significance of those involved variables for the suggested model and backward step modeling for construction of the final model.

- Adjusted Odds ratio and 95% confidence interval were employed to see the variables significance between the cases and controls as determinant and to control confounding variables.

With the secondary data from health institution, health care utilization rate of different health services at Wereda and kebele level were determined and mapped using health mapper.

4.5. Ethical Considerations

Ethical clearances were obtained from the ethical review committee of Addis Ababa University, Medical Faculty, and Department of Community Health. Then after communication with the afar-regional health bureau and the regional counseling office written consent were secured. From the region the selected zone one-health office, and the selected district health offices were contacted and they endorse the study with consent latter. Further the principal investigator contacted the local clan leaders and community elders of the chosen ‘Wereda’ and ‘kebeles’.

5. RESULTS

5.1. Results of Community Survey

5.1.1 Description of the surveyed study subjects

In our survey in 702 households, 1766 eligible individuals were analyzed from 637 households (65 households were left out since they had no report of sickness). Males comprise 991(56.2%). The mean age was 21.5 years. The average family size was 6.9. With regard to the marital status of the study subjects, majority (74%) were married. (see table 2).

The average number of ill subjects reported in six months recall period were 2.8 with range 1-9 that will make 5.6 episode of illness per household per year. When disaggregated to for mobile community it was 2.98 that will make 5.96 episode of illness per household per year and for settled community it was 2.64 that will make 5.28 episode of illness per household per year.

With regard to response to illness episodes 368 (20.8%) did nothing, 127 (7.2%) self-treatment or went to friends neighbor, 300(16.75%) went to traditional 111(6.95%) transitional healer, 859(48.7%) used modern health care (of which 548(31.1%) government facilities, 248(14 %) private facilities and 62(3.5 %) used missionary facility). When disaggregated to for mobile community it was (23.9%) did nothing, (8.5%) self-treatment or went to friends neighbor, (14.6%) went to traditional (7.7%) transitional healer, (45.4%) used modern health care (of which (29.2%) government facilities, (13 %) private facilities and (3.2 %) used missionary facility). For settled community it was (18.4%) did nothing, (6.1%) self-treatment or went to friends neighbor, (18.9%) went to traditional (5.2%) transitional healer, (51.3%) used modern health care (of which (32.5%) government facilities, (15 %) private facilities and (3.8 %) used missionary facility). All survey and study subjects are from rural kebeles in the Wereda, afar in ethnicity and Moslem by religion.

5.1.2. Description of the case control study subjects

When we look the case control study subjects in totality, educational status majority 87.4% were who can not read and write, 10.4% were who can read and write spiritual education and 2.3% were having other formal education. With regard to occupational status of the sick individual majority 40.9% were cattle breeders, 21.6 % were goat breeders 16 % were housewives and 21.6 % were religious, clan leaders, government workers and others.

From family reserve variables like from the social context of the pastoralists there animal reserve and income from other sources of the household of the respondents for the number of sheep majority 59.1% were having the median ten and below, goat 50.2% had the median fifteen and below. For cattle 50.2% had the median nine and below, for camel 52.6% the median three and below, income from other source in birr 87.4% had no other source of income (See Table 1).

Regarding means of transport to the particular health care the patient utilized during their illness, 33% traveled on foot, 16% traveled on human back and 24.5% traveled by car and 25.7% on animal back. The time spent on the way to the particular health care estimated access in walking distance hours 56.7% in three-hour distance. The cost to particular health care for the particular episode of illness paid for treatment was the median 20 birr and below for 56.9% of the respondents and for transport was the median 15 birr and below for 51.1% of them. The

source of money for the cost of transport and treatment to the particular health care paid in birr for the particular episode of illness, 5.6% were from own reserve, 35.9% were free treatment, 5.4% were from family relative, 24.2% were from kinship leader, 0.6% were from loan, 0.9% were from selling livestock, 11.7% were from health workers, 15.8% were from other sources. Considering that the sold livestock is communal ownership is the belonging of the family we can say the whole source of money comes from the family and close family kinship.

Table 1. Socio-demographic characteristics and other variables of Study Subjects

Dubti woreda, Afar region Ethiopia, (December 2004) N=538			
Variable	Category	Number	Percent
Sex of ill	Female	190	35.3
	Male	348	64.7
Age category	0-5	46	8.6
	6-15	170	31.6
	16-25	157	29.2
	26-35	66	12.3
	Greater than 35	99	18.4
Marital status	Single	83	15.4
	Married	398	74.0
	Others	57	10.6
Family size	1-5	195	36.2
	6-10	290	53.9
	Greater than 10	53	9.9
Sheep	0-10	318	59.1
	Greater than 10	220	40.9
Goat	0-15	270	50.2
	Greater than 15	268	49.8
Cattle	0-9	270	50.2
	Greater than 9	268	49.8
Camel	0-3	283	52.6
	Greater than 3	255	47.4
Income in birr	N0 income	470	87.4
	Greater than 0	68	12.6
Educational status	Can't read and write	470	87.4
	Others	68	12.6
Occupation	Cattle breeder	220	40.9
	Goat breeder	116	21.6
	House wife	86	16.0
	Others	116	21.6
Time of travel to facility(hour)	0-3	305	56.7
	Greater than 3	233	43.3
Birr paid for treatment(birr)	0-20	306	56.9
	Greater than 20	232	43.1
Birr paid for transport (birr)	0-15	275	51.1
	Greater than 15	263	48.9
Source of information	TBA/Health worker	53	9.9
	Relative	214	39.8
	Radio	44	8.2
	Daggu	227	42.2
Disability days before Rx	0-4	278	51.7
	Greater than 4	260	48.3
Health Care Utilization	Modern use	273	50.7
	Non-use	265	49.3
Mobility	Mobile	276	51.3
	Settled	262	48.7

Regarding means of transport to the particular health care the patient utilized during their illness, 33% traveled on foot, 16% traveled on human back and 24.5% traveled by car and 25.7% on animal back. The time spent on the way to the particular health care estimated access in walking distance hours 56.7% in three-hour distance. The cost to particular health care for the particular episode of illness paid for treatment was the median 20 birr and below for 56.9% of the respondents and for transport was the median 15 birr and below for 51.1% of them. The source of money for the cost of transport and treatment to the particular health care paid in birr for the particular episode of illness, 5.6% were from own reserve, 35.9% were free treatment, 5.4% were from family relative, 24.2% were from kinship leader, 0.6% were from loan, 0.9% were from selling livestock, 11.7% were from health workers, 15.8% were from other sources. Considering that the sold livestock is communal ownership is the belonging of the family we can say the whole source of money comes from the family and close family kinship.

When we look to the source of information on health care majority 42.2% and 39.8% were from Daggue (traditional man-to-man communication) and from close relative respectively, followed by 9.8% from TBA/Health worker and only 8.2% from radio.

As well looking to the issue of who attended the last delivery in that particular household in the last delivery in majority 51.5%, 40.5% attended by grandmother and TBA in a close family relative and only 7.6 attended by others including health worker friends and self-attendance. It shows the community reserve for traditional health care.

5.1.3. Level of health care utilization in the surveyed respondents

In the survey, among the mobile community 398(46.12%)utilized modern health care and in the settled 487(53.93%)utilized modern health care. Mobility pattern was found to be

statistically significant with (OR=1.368 (1.134,1.649) at 95%CI with crude analysis and 1.377(1.138,1.667) when adjusted. (See table 2).

Table 2. Analysis of Survey variables in health care utilization, among the two-sub community

Dubty Wereda, Afar Region, Ethiopia (December 2004) N=1766

Variable	Category	Modern health care non-users	Modern health care users	Crude odds ratio with 95.0% C.I	Adjusted odds ratio with 95.0% C.I
Mobility	Settled	416	487	1.368(1.134,1.649) ***	1.377 (1.138,1.667) ***
	Mobile	465	398	1	1
Sex of ill	Female	374	401	1.123(.931,1.356)	1.120 (.926,1.355)
	Male	507	484	1	1
Family size	1-5	253	251	1.207 (.889,1.638)	1.055 (.749,1.485)
	6-10	493	523	1.290(.975,1.707) *	1.249(.931,1.675)
	>10	135	111	1	1
Age category	0-5	91	98	1.556(.932,2.595) *	1.602(.956,2.687) *
	6-15	315	275	1.261(.800,1.987)	1.272(.804,2.013)
	16-25	226	245	1.566(.987,2.485) *	1.579(.990,2.516) *
	26-35	106	108	1.472(.891,2.432)	1.431(.862,2.376)
	36-45	62	74	1.724(1.002,2.966) **	1.709(.989,2.951) *
	46-55	29	49	2.441(1.305,4.563) ***	2.460(1.309,4.622) **
Number of ill in the family (last 6 months)	56-85	52	36	1	1
	1-2	235	264	1.321(1.006,1.734) **	1.223(.896,1.669)
	3-4	452	456	1.186(.928,1.515)	1.102(.848, 1.433)
	>5	194	165	1	1

* P < 0.1

** P < 0.05

*** P<0.01

□ Variables adjusted for variables in the model, for mobility pattern, gender, family size, age category, and number of ill in the family for the last month.

5.1.4. Determinants of health care utilization in among mobile community

In the mobile sub-community from the total of 863 surveyed sick individuals 276 were taken of which 136 (49.27%) had utilized modern health care (cases) and 140(50.73%) non-utilized in the neighborhood (controls).

In the final analysis of stepwise backward logistic regression after adjusting the effects of all other variables in the model the significant variables were from the predisposing factors, among family composition variables family relation were significant and positive factor, for Daughter/son with (OR=2.425(1.032, 5.697) at 95%CI with adjusted analysis). From health belief reason for choice were significant factor and for economy reason (OR= .263(.070, .996) at 95%CI with adjusted analysis), for mobility as a reason with (OR= .111(.030, .406) at 95%CI with adjusted analysis).

Source of advice was also significant and positive factor, for self-advice (OR= 34.196(3.889, 300.715) for advice from family member with (OR= 84.823 (8.969, 802.213) at 95%CI with adjusted analysis) and advice from religious leaders, tribal leaders with (OR=50.254(4.091, 617.346) at 95%CI with adjusted analysis) (See Table 3).

Table 3. Analysis of Mobile community health care utilization determinants, Dubty Wereda, Afar Region, Ethiopia (December 2004) N=276

Variable	Category	Modern health care non-users	Modern health care users	Crude odds ratio with 95.0% C.I	Adjusted odds 95.0% C.I
Family Relation	Household head	29	47	2.275(1.269,4.079) ***	2.137(.929, 4.913) *
	Wife	14	10	1.003(.413, 2.432)	.573(.164, 2.004)
	Daughter/son	24	27	1.579(.820, 3.040)	2.425(1.032, 5.697) **
	Others	73	52	1	1
Reason for choice	Nearness	20	40	2.421(1.076,5.446) **	.541(.169, 1.734)
	Thought it is good	42	24	.692 (.315,1.521)	.475(.142, 1.588)
	Economy reason	20	11	.666(.256, 1.729)	.263(.070, .996) **
	Mobility	24	8	.404(.148, 1.102) *	.111(.030 , .406) ***
	Severity of disease	11	34	3.742(1.503,9.312) ***	.840(.245 , 2.883)
	Others	23	19	1	1
	Self	59	64	22.187(5.146,95.661) ***	34.196(3.889, 300.715) ***
Who gave advice/decide	Family member	35	64	37.401(8.544,163.2) ***	84.823 (8.969, 802.213) ***
	Relative/tribal leader/traditional healer	5	6	24.544(3.863,155.943) ***	50.254(4.091, 617.346) ***
	Others	41	2	1	1

* P < 0.1

** P < 0.05

*** P<0.01

□ Variables adjusted for variables in the model, for predisposing factor (family composition, social structure, health belief), enabling (family resource and community resource) and the need factors (illness variables)

5.1.5. Determinants of health care utilization in among settled community

In the settled from the total of 903 surveyed sick individuals 262 were taken of which 137 (52.29%) had utilized modern health care (cases) and 125(47.71%) non- utilized in the neighborhood (controls). In the final analysis of stepwise backward logistic regression after adjusting the effects of all other variables the statistically significant variables are as follows. From health belief reason for choice were significant factor, for access as a reason with (OR= 2.706(1.245, 5.882), for Severity of disease which was significant in crude analysis become non-significant but with P < 0.1 (OR= 2.249(.988, 5.120) at 95%CI with adjusted analysis).

Disability days before treatment was also statistically significant and negative factor for less than four disability days with (OR= 2.004(1.134, 3.540) at 95%CI with adjusted analysis). (See table 4).

Table 4. Analysis of settled community health care utilization determinants, Dubty Wereda, Afar Region, Ethiopia (December 2004) N= 262

Variable	Category	Modern health care non-users	Modern health care users	Crude odds ratio with 95.0% C.I	Adjusted odds 95.0% C.I
Reason for choice	Nearness	24	49	3.116(1.461, 6.643) ***	2.706(1.245, 5.882) **
	Thought it is good	30	20	1.018(.453, 2.285)	.955(.418, 2.179)
	Economy reason	13	11	1.291(.480, 3.474)	1.309(.477, 3.596)
	Mobility	9	5	.848(.246, 2.921)	.674(.187, 2.434)
	Severity of disease	20	33	2.518(1.129, 5.616) **	2.249(.988, 5.120) *
	Others	29	19	1	1
Disability days before treatment	0-4	61	86	1.769(1.081, 2.896) **	2.004(1.134, 3.540) **
	>4 (median)	64	51	1	1

* P < 0.1

** P < 0.05

*** P < 0.01

□ Variables adjusted for variables in the model, for predisposing factor (family composition, social structure, health belief), enabling (family resource and community resource) and the need factors (illness variables)

5.1.6. Determinants of health care utilization in among overall pastoralist community

After combining the two case control studies in the two sub-community for the overall pastoralist community in the final analysis of stepwise backward logistic regression after adjusting the effects of all other variables, From health belief reason for choice were significant factor, for mobility as a reason with (OR= .242(.105, .557) at 95%CI with adjusted analysis) for economic reasons with (OR= .432(.202, .922).

Source of advice for decision was also significant and positive factor, for self-decision with (OR= 4.659(2.494, 8.705), for advice from family member with (OR= 5.841(2.986, 11.426) at 95%CI with adjusted analysis) and advice from religious leaders, tribal leaders and traditional health worker with (OR=6.545(2.278, 18.807) at 95%CI with adjusted analysis). (See table 5).

Table 5. Analysis of Overall Pastoralist health care utilization determinants, Dubty, Afar, Ethiopia (December 2004) N=538

Variable	Category	Modern health care non-users	Modern health care users	Crude odds ratio with 95.0% C.I	Adjusted odds 95.0% C.I
Reason for choice	Nearness	44(33.1)	89(66.9)	2.768(1.593, 4.810) ***	1.356(.718, 2.561)
	Thought it is good	72(62.1)	44 (37.9)	.836(.477, 1.467)	.658(.355, 1.221)
	Economy reason	33(60.0)	22(40.0)	.912(.461, 1.805)	.432(.202, .922) **
	Mobility	33(71.7)	13(28.3)	.539(.251, 1.160)	.242(.105, .557) ***
	Severity of disease	31(31.6)	67(68.4)	2.958(1.628, 5.372) ***	1.362(.690, 2.688)
	Others	52(57.8)	38(42.2)	1	1
Who gave advice and decide	Self	114(45.4)	137(54.6)	4.567(2.630, 7.928) ***	4.659(2.494, 8.705) ***
	Family member	67(39.9)	101(60.1)	5.728(3.203, 10.245) ***	5.841(2.986, 11.426) ***
	Relative/tribal leader	8(34.8)	15(65.2)	7.125(2.649, 19.163) ***	6.545(2.278, 18.807) ***
	Others	76(79.2)	20(20.8)	1	1

* P < 0.1

** P < 0.05

*** P < 0.01

□ Variables adjusted for variables in the model, for predisposing factor (family composition, social structure, health belief), enabling (family resource and community resource) and the need factors (illness variables)

5.2. Results of Secondary Data

In wide-ranging health facility based study and mapping shows distance decay degradation, underutilization of peripheral health care and great discrepancy of utilization rate between the town, the settled and the mobile pastoralist community kebeles. 93,541 Outpatient statistics of two hospitals, 3 health centers and 16 government clinics and 1 private clinic 1197 antenatal care attendants of one health center, 1056 family planning accepters, 207 delivery attendants and 1789 total inpatient admission from one hospital were collected. In Aysaita Wereda 87 % outpatient attendants 57.45% antenatal care attendants 99.05% family planning accepters 88.89% delivery attendants were from same town.

Hospital admission in Dubty Wereda in maternity ward 71.33% pediatrics ward 89.38% surgical ward 51.60%, medical ward 62.05 % were from the same town of the Wereda. In maternity ward 17.75% rural areas of the same Wereda, 10.92% other Weredas of the same zone and none from other zones while the hospital supposed to serve the whole region for emergency obstetric care. Regarding health care utilization for hospital outpatient attendants the average for the whole zone from the two hospitals is 06.0 when disaggregated for predominantly mobile pastoralist Wereda it became 0.037, and settled 14.00 per hundred persons (see fig.3).

Regarding health care utilization for health center outpatient attendants in the better off Wereda, Aysaita the average for the whole Wereda is 56.8 when disaggregated for town 118.0 predominantly settled 20.8 and for mobile pastoralist kebele it became as low as 6.7 per hundred persons. In predominantly mobile pastoralist Wereda, Elidar the average for the whole Wereda is 7.0 when disaggregated for town 88.7 predominantly settled 15.1 and for mobile pastoralist kebele it became as low as 0.39. The overall finding shows that the health care utilization rates are far behind the national target 200 person in 100 population visit per year with all health facility type. The mapping is shown on figure 3-9 with details at kebele level (2).

In addition the community has scattered life style with low population density of 12 people per KM². The trained health worker to population ratio in is very low, for medical doctors it is 1 physician for 110,584 populations and for nurses it is 1 nurse for 7,806 population and most clinics treat from three to five patients on average per day. Regarding all the above variables it is far behind the national target.

5.3. Result of Qualitative Study

5.3.1. Predisposing factors:

Age category, gender, marital status and family size were categorical variables identified in the family composition and their axes of effect on health care consumption are by influencing the community's belief system and judgment. Additionally family size also affects family and community's resource. Language and pastoralist mobility were variables identified in the Social structure. The axes of their effect on health care utilization are by affecting directly patient health worker interaction in the decision of the type of care to utilize during illness episode and family and community's resource as well as access respectively. Knowledge of health problems and feelings towards modern health care system were other variables identified in the Health belief. The axes of their effect on service use are by affecting family and community's insight and habits.

5.3.2. Enabling factors

Family livestock reserve (resource), education and occupation are categorical variables identified in the Enabling factor. They influence family and community's resource as well as belief for utilization of health care system. Communal decision-making, "Daggu" traditional man-to-man communication, free care and traditional medicine were variable identified in the social reserve. Its effects on health care are by influencing community's resource,

communication and coordination capacity for utilization of health care system. In addition traditional medicine affects by availing accessible alternative way of getting relief from illness.

5.3.3. *Need factors*

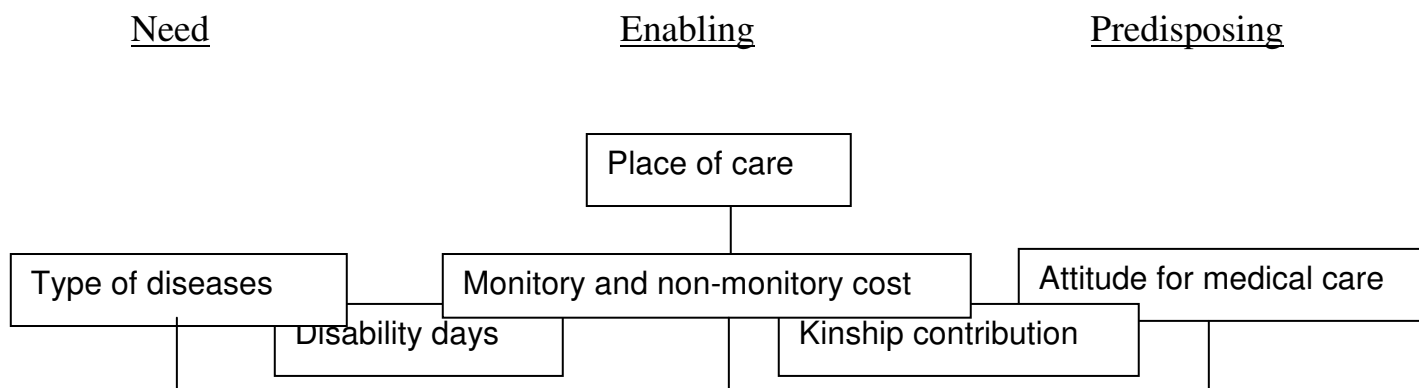
Illness symptom and disability days were categorical variable identified in illness factor. It provoke on health care consumption by influencing on their judgment to prefer the type of health care for particular illness and number of disability days they utilize.

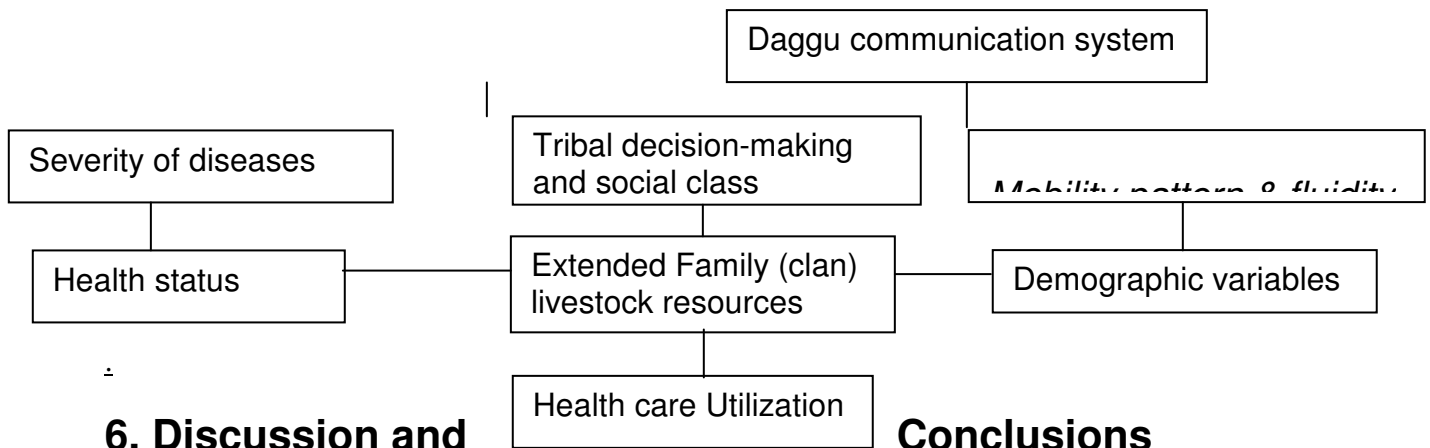
On further analysis of the motivation of the community towards the health facilities use and its determinants we have found different concepts. Those detailed findings are thoroughly presented in the discussion part.

5.3.4. *Final theoretical construct of modeling in of triangulation*

After assessing the identified categorical variables with fitting the three components of modified ‘Andersen’ behavioral model in the communities, we identified in the predisposing factors marital status and family size as determinant. "Daggu" Traditional man-to-man communication and mobility pattern as new additive factor with scattered life style were found to be most important for the access to modern health care. From enabling factors family livestock resources and social class are predictor of their utilization of modern health care system and consultative decision-making cultural of the local tribal leaders and the communal way of contributing for health care utilization cost as new additive factors. (See figure 2. pp 45).

Figure 2 Final modified Anderson behavioral Model of family use of health service in Afar pastoralists with some additive factors





6. Discussion and

Conclusions

6.1. Discussion

The overall findings of this study were four fold. One, the health care utilization rate study reveled distance degradation and great discrepancy and inequality between urban, settled and mobile sub communities. Two, in the survey there were statistically significant difference in the utilization of health service between mobile and settled community with P Value < 0.01.

Three, in the final analysis of stepwise logistic regression after adjusting the effects for all other variables with P value < 0.05 for the mobile community family relation, economic reason, mobility as a reason, community and family source of advice for decision become statistically significant. For the settled community, access and disability days before treatment become statistically significant. In the overall pastoralist community economic reason, mobility as a reason, family and community source of advice for decision become statistically significant.

Four, after triangulation the three findings with our qualitative analysis mobility pattern, livestock reserve, consultative decision making culture of the local tribal leaders, the communal way of contributing for health care cost and "Daggu" (Traditional man-to-man communication) as strong determinant and new additive factors to the behavioral model for pastoralists.

When we evaluate our epidemiological methodology, case control study is time and cost efficient analytic study for such outcome variable like modern health care utilization in

remote pastoralist. Regarding internal validity biases are very difficult to control. Using the time gap six months recall time, recall bias are unavoidable but it was anticipated to cover the seasonal changes and to get good sample size. To control misclassification biases the use of clear definitions between cases and controls with respect to the outcome variables and also between mobile and settled community and they were strictly adhered during the data collection. As to the generalizability of the quantitative study the study being community based collection of data on demographic characteristics and its comparability with regional household socio-economic survey eight year back renders its finding statistical generalizability (18).

As to the trustworthiness of the qualitative part of the study we have followed competent procedure grounded theory approach. It has credibility and regarding the identified problems, situations and the research question, those theories has analytic generalizability.

Perceived morbidity health seeking behavior and Utilization rates

The average number of ill subjects reported in six months recall period were 2.8 with range 1-9 that will make 5.6 episode of illness per household per year. When disaggregated it shows significant high prevalence of diseases among the mobile community. They utilizes more of no treatment, self-treatment, traditional and transitional healer than the settled community, which is found statistically significant different in the two community. It implies significantly vary low health need coverage among poor and vulnerable mobile community in the area.

In wide-ranging health facility based study and mapping of outpatient attendants by contrast Antenatal care attendants were less concentrated but Family planning accepters are highly concentrated than other services. Hospital admission in Dubty Wereda in maternity ward most users were from the same town. This finding is similar with other studies (9). It shows inpatient users were more clustered residentially than outpatient. Deficiencies of the referral system, transportation barrier and cost could be the possible reasons.

Regarding health care utilization for health center outpatient attendants in predominantly mobile pastoralist Wereda, Elidar the average for the whole Wereda is 7.0 when disaggregated shows great discrepancy of utilization rate between town, settled and mobile pastoralist community kebeles with ratio of 227 : 39 : 1. In addition the community has scattered life style with low population density, very low trained health worker to population ratio, and most clinics treat from three to five patients on average per day indicating very low health need coverage.

6.1.1. Predisposing factors

Age was not found significant in any of the models. Hilemariam D. have found age as statistically significant and positive factor affecting modern health consumption. Finding from Shamebo D. age category between 15-49 were more utilizers (8,29). In conceptualization gender and marital status were of prominent importance in the degree of gender discrimination, different harmful traditional practices and different marriage practices (Inheriting-brothers-wife, Polygamy) and women fertility. It affects women in different part of her life cycle.

Mobility became statistically significant and strongly negative factor affecting modern health consumption between the settled and mobile communities. The extent and duration of mobility depends on the amount, intensity and occurrence of the rain (over-flooding mosquitoes and snack infestation), pasture. There were similar finding in other study (7, 11).

In the community health notion is defined in such a way that if the individual has good appetite, shining face, and works well and illness defined as discomfort with somatic and psychological sub-component mainly considering the severe form of illness and the number of disability days, having wide range of tolerance for pain and diseases.

From health belief reason for choice, mobility as a reason were statistically significant and negative factor. Economic reasons were statistically significant and negative factor. Access was statistically significant and positive factor in the settled community.

Health belief was found to be important in judging health facilities as bad or good with respect to quality of health care. Rural drug vendors and private clinics were rated as more preferential because of drug availability, short waiting time, working in local market days, and any time for emergency illnesses. There were similar finding also in other study (7, 8, 15). Such strong positive side can be used in involving the private sector in pastoralist extension package.

The local Government hospital was discredited for their long waiting time, high staff turnover and the absence of drugs supply. Government clinic was rated as more incompetent, inefficient in providing health. There were similar finding also in other study (8, 10, 29). This shows there is a need for effective management of the public sector with participatory involvement from the local tribal institution for enhancing the quality of service.

6.1.2. Enabling Factors

Family relation became statistically significant and positive factor in the mobile community, and it shows that household head consumes more followed by children and wives consume least. In conceptualizing extended family reserve the family resource of income and wealth is the livestock they own, their number and mainly its market cost have impact on their health care choice. There is no reserve, salary, lone, they depend primarily on their animal reserve. Life is strongly tied with their animal survival and 88.5% respondents have good attitude for collaboration of animal and human health. After assessing the cost benefit, it is essential to have collaboration of animal and human health provision.

Source of advice for decision became statistically significant and positive factor in the mobile and overall pastoralist community. The trend shows with greater Odds difference most users than non-users had got advice for decision from family member and tribal leaders.

Among the study subjects 65.8% of those paid for treatment and transport cost is covered from close family or clan resource. Communal way of contributing resource is important in the sharing of expense for treatment in kind that is decided by family or clan assembly. In another study, slikkerveer reported that Gossa among Oromo kinship group of eastern Ethiopia plays an important social function by collectively

providing the necessary fund for health care when serious illness affects its member (15). Haile Mariam found that 21.5 % for the study community are already utilizing "Edir" to finance part of there health care cost (31).

In our study Afar pastoralist family is organized along kinship territorial lineage under distinct clan. Clan decision with its adaptive social reward system for its members like respect, recognition, spiritual blessing within its cultural value is always accepted and practiced. It is not only for burial ceremonies but also as primary social tools for survival. In health problems it covers full expense in every stage from diagnosis and treatment to the stage of rehabilitation. Its organization is flexible, practically adapted to the problem solving. It is accepted in the religion and cultural conviction as strong community mobilizer. This structure can be feasible for instituting indigenous risk sharing mechanism after operational research.

Among the study subjects 80.0% of them have got health information from close relative and "Daggu" (Traditional man-to-man communication). It shows that endogenous reserves of cultural communication are in a better position than message through TBA/Health worker and radio and can be exploited for future health information system with further operational research.

Traditional medicine is widely practiced in the community. It includes herbalists; religious kalicha; astronauts, fortunetellers etc. The practitioners are their tribal members found near home and move with the community. This health care system accommodates the culture, the language and religion of the community. The payment is mainly in kind by using animals and their products. It can be before, after treatment or in loan. There were similar finding also in other study (10, 7, 11, 15).

6.1.3. Need factors

Severity of diseases was statistically significant in crude analysis and become non-significant when adjusted. In other study severity were significant in the choice of government

hospital (29). Disability days before treatment became significant and negative factor for modern health use in the settled community.

6.2 Conclusion

- In wide-ranging health facility based study and mapping very low trained health workers to population ratio, distance decay degradation, underutilization of peripheral health care and great discrepancy of utilization rate between town, settled and mobile pastoralist community kebeles. Moreover all measured variables are far behind the national target.
- Mobility pattern is strong factor of modern health service use among pastoralists.
- For the mobile community family relation, economic reason, community and family source of advice for decision become statistically significant.
- For the settled community, nearness or access and disability days before treatment become statistically significant.
- In the overall pastoralist community economic reason, mobility, family and community source of advice for decision become statistically significant.
- **After triangulation mobility pattern, livestock reserve, consultative decision making, the communal way of contributing and "Daggu" (Traditional man-to-man communication) as strong determinant and new additive factors to the behavioral model for pastoralists.**

6.2.Limitation of the Study

- The introduction of biases in different qualitative and quantitative part of the study even if we tried to keep it to the minimal. Lack of well-designed study tolls.

- In the focus group the interpreters used, although were trained and competent, some subtleties of meaning are inevitably lost during translation.
- In the collection of secondary data some are lost and incomplete, avoided from analysis.
- The assumption that the quality and cost of care of those health services of modern and non modern health care services utilization as equal. .

6.4. Recommendations

- In terms of health policy and practice we have to make paradigm shift. In pastoralistes equity prospect including budgeting the health sector should be based on equality of access or utilization of health care for equal need rather.
- We have to treat the health provision of settled and mobile communities differently.
- There is a need for effective management of existing public health sector with participatory involvement from the local tribal institution for improved service provision.
- The consultative decision-making cultural of the local tribal leaders with the widely available traditional medicine and the private sector can be tapped and used as entry point, in the designing of accessible, affordable and sustainable pastoralist health extension package and collaboration with animal health service.
- Strengthening, capacity building, close collaboration and organizational support with no negative influence for the traditional medical practice with emphasis to its autonomous organization from for equitable distribution of primary health care with integration.
- "Daggu" Traditional man-to-man communication can be used in designing health information system for pastoralists with good capacity building and coordination.

- The communal way of contributing for health care utilization cost can be utilized to create pastoralist health care insurance scheme after feasibility study with support from NGOs, government and the private sector.

Figure-3 (2003-2004) (1996 E.C.)Hospital Utilization rate per 100 population per year of Weredas in Afar region zone one of two hospitals in the zone



Figure-4 (2003-2004) (1996 E.C.)Health center outpatient department Utilization rate per 100 population per year of Elidar Wereda kebeles of Afar region zone one

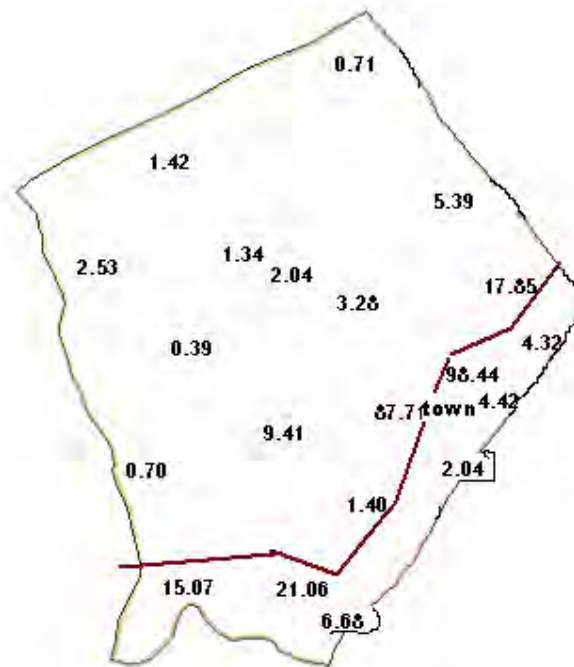


Figure-5 (2003-2004) (1996 E.C.) Government Clinic outpatient department Utilization rate per 100 population per year of Afambo Wereda kebeles of Afar region zone one

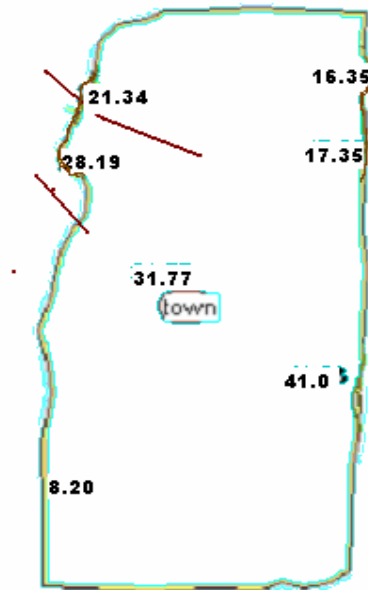


Figure-6 (2003-2004) (1996 E.C.)Health center outpatient department Utilization rate per 100 population per year of Aysaita Wereda kebeles of Afar region zone one



Figure-7 (2003-2004) (1996 E.C.)Health center outpatient department Utilization rate per 100 population per year of Chifra Wereda kebeles of Afar region zone one

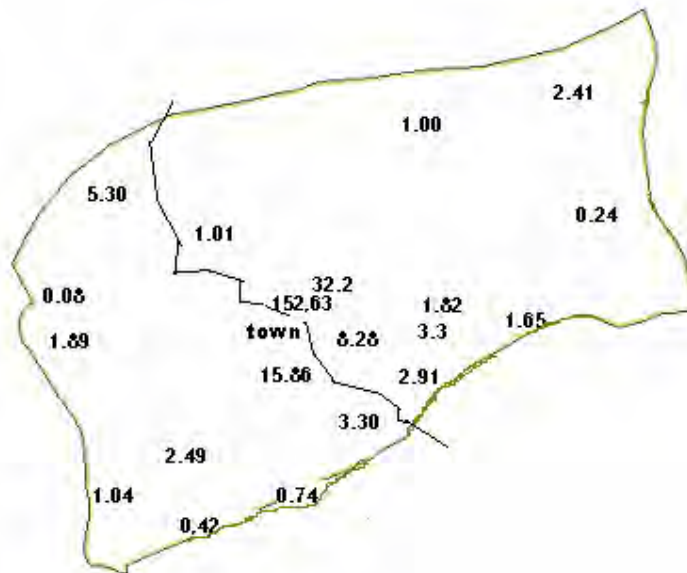


Figure-8 (2003-2004) (1996 E.C.)Hospital outpatient department Utilization rate per 100 populations per year of Dubty Wereda kebeles of Afar region zone one

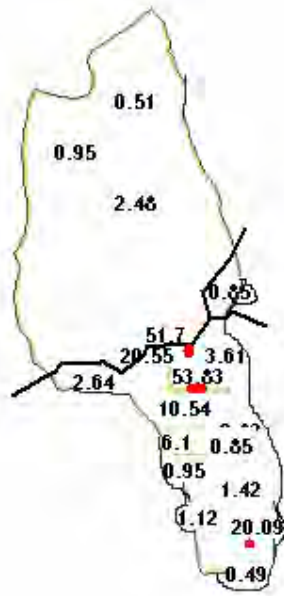
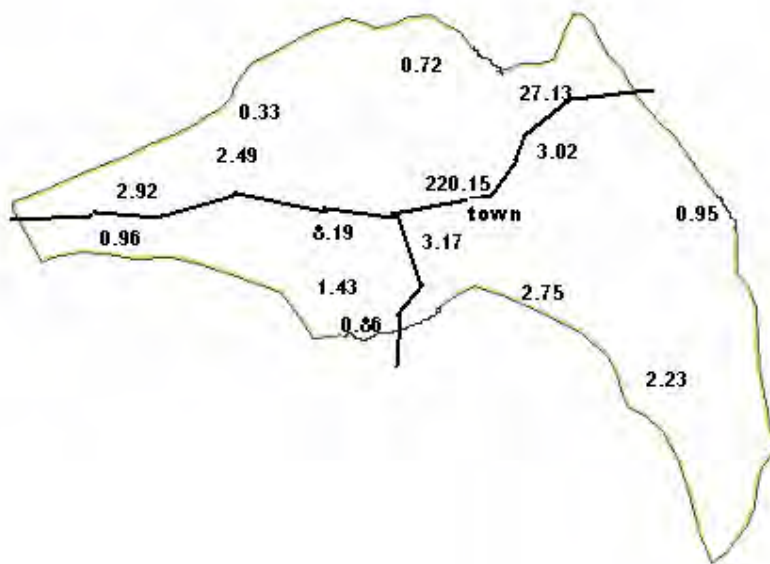


Figure-9 (2003-2004) (1996 E.C.)Hospital outpatient department Utilization rate per 100 population per year of Mille Wereda kebeles of Afar region zone one



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