

Determinants of equity in utilization of maternal health services in Butajira, Southern Ethiopia

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Abstract

Background: Equity in public health implies that ideally everyone should have a fair opportunity to attain a full health potential and no one should be disadvantaged from achieving this potential. The health policy of Ethiopia emphasizes universal access for all segments of population. This study was done to assess the determinants of equity in the provision and utilization of primary maternal health care services in Meskan and Mareko *Woredas*, Southern Ethiopia.

Methods: The study is community-based, case control study among 190 randomly selected cases [households with pregnant mothers who received at least one Antenatal Care (ANC) visit from a health facility and 191 controls [households with pregnant mothers who did not received ANC from a health facility] in Butajira Rural Health Program site of Meskan and Mareko *Woredas*.

Results: Among all socio-demographic and socio-economic factors assessed to be determinants of utilization of maternal health services, only place of residence (being an urban ($X^2=9.96$, $p<0.01$)), average annual income level of more than 1000 birr ($X^2=6.67$, $p<0.05$), mothers having some education ($X^2=8.57$, $p<0.05$), and walking distance from a health facility <1hour ($X^2=4.96$, $p<0.05$), were significantly associated with being able to receive ANC during pregnancy as confirmed by the review of health services records.

Conclusion: This study revealed that place of residence, average annual income, mothers' education, distance from a health facility were determinants in the utilization public health programs. Providing outreach services for people in low utilization areas and enhancing awareness for utilization of maternal and child health services are recommended. *Ethiop. J. Health Dev.* 2012;26 Special Issue 1:265-270]

Introduction

Equity in health implies that ideally everyone should have a fair opportunity to attain his or her full health potential and, that no one should be disadvantaged from achieving this potential, if it can be avoided. Equity in public health is that the primary determinant in the use of services should be the need for them and other factors such as income, race, place of residence and so forth should not play an important role in selecting who receives services and who does not (1). Equity in access to and use of health services is commonly an important goal for policymakers in most countries (2, 3). The fundamental principle of equity is that of equal treatment for all socioeconomic groups, as well as gender and ethnic categories of the population with equal needs (4). However, various studies have shown the distribution of poverty, race, rural residence, urbanization and homelessness, migration, education, information and skills as having effect on access to health care (5-7).

Understanding the hampering impact of poverty on the ability and willingness to pay of the poor, most governments strive to provide basic preventive health services to all segment of population. This is the concept of the primary health care approach with fundamental principle to narrow health equity gaps, focus on preventive health service, and aimed at universal coverage among which Maternal and Child Health (MCH) was identified as one of the "essential components of Primary Health Care (PHC)" (8, 9).

The health policy of Ethiopia emphasizes universal access for all segments of population, and geographic coverage by health services is estimated to be 89% in 2010 (10). However, access to the services is not uniform

and an earlier study in Butajira has shown those in urban area, those with higher asset score, and males as significantly more likely to have visited higher-level health facilities (11).

There is no single measure to gauge equity in the distribution of health care system. It might be carried out by distribution of health resources, health expenditures, morbidity and mortality, or need for basic preventive care services. The distribution of need for basic preventive services such as vaccination coverage among all under five children, ANC follow up among all pregnant women can be used as indicators to assess equity, as these services are equally needed by all children and mothers (4).

Generating data on equity in the distribution of primary health care programs and on the factors affecting this distribution is of vital operational importance. This is particularly true in developing countries such as Ethiopia, where emphasis on equitable distribution of basic health services is currently established as one of the major prerequisites of poverty reduction initiatives (12).

Methods

The study was conducted in ten selected *kebeles* (peasant associations) of Meskan and Mareko Districts, Gurage Zone, Southern Ethiopia from November 2004 to January 2005. The Districts were divided into 82 peasant associations and 4 urban dwellers associations; the total population in 2010 was estimated to be 285,900 (projected from reported 1997 population with a rate of natural increase of 2.7%), among which 21% are women of 15-44 years age group and 15% are under five children (13).

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The study is community-based, case control study aimed at collecting basic socio-demographic and economic data as well as other possible determinants of accessing health services among randomly selected cases [households with pregnant mothers who received ANC follow up services from formal health providers] and controls [households with pregnant mothers who did not receive ANC follow up services from formal health providers] among residents of Butajira Rural Health Program site during the year preceding the survey (2003 [1996 EC]) using structured questionnaires administered by trained data collectors.

The sample size was determined using standard formula for a case control studies using an earlier report that showed 48% of all the mothers in the district did not attend ANC (the corresponding proportion for mothers in urban area being 27%) (14).

Based on the following assumptions, sample sizes of 192 cases and 192 controls were used as study population:

- Proportion of exposure among controls (P_o) = proportion of urban non users=27%;
- Odds Ratio (OR) worth detecting = 2;
- 95% confidence level; Power of 80% with Case: control ratio of 1: 1; and
- 20% allowance for losses and refusals.

Three weeks prior to actual data collection, the ten enumerators for the data collection (who were given for the necessary training) contacted a total of 763 mothers in the ten Peasant Associations (PAs), and asked whether they used ANC during this pregnancy or not. The 10 PAs are selected because they are the sites for the Demographic Surveillance System (DSS) of the Butajira Rural Health Program, which continuously registers all vital events in the ten PAs. Accordingly, 439 mothers had attended ANC (eligible cases) and 324 mothers did not attend ANC (eligible controls). Then the principal investigator selected a random sample of 192 cases from 439 ANC users (eligible cases) and a random sample of 192 controls from 324 ANC non-users (eligible controls). Printed lists of these selected households were given to 10 trained data collectors who administered the interview using structured questionnaires. The outcome variable was utilization of ANC services among all pregnant mothers living in Butajira Rural Health Program site during 2003 (1996 EC), while exposure variables included: socio-demographic, socio economic and geographic factors.

Data were collected using a study format and structured questionnaires that were pre-tested in one of the villages in the District (that shared somehow similar economic, geographic, cultural and socio-demographic characteristics with the other study villages). In addition to the ten trained enumerators for the data collection, there were two supervisors who checked each and every

completed form as well as visited 5% of randomly selected households.

Data were coded, entered into computer using SPSS version 11.1 package and cleaned. Analysis was done using SPSS/PC package. Associations between variables were assessed using crude and adjusted odds ratios and significance of associations was tested using χ^2 test and multiple logistic regressions. Finally, the results of the analysis were presented in tables and graphs for further description and interpretations.

Operational Definitions

Antenatal care coverage: is defined as the percentage of women who utilized antenatal care provided by formal health services at least once during pregnancy among all women who gave birth to a live child in a given time period.

Access: physical accessibility of formal health services with adequacy of supplies and absence of barriers such as affordability and acceptability of services.

Antenatal services: are services given by formal health facilities to pregnant women so that they have safe pregnancy and healthy baby that include: risk screening, detection and management of associated diseases, efficient maintenance of maternal nutrition and health, and IEC related to safe delivery and early recognition and management of complications including abortion.

Utilisation: is the action of receiving or using a service from formal health providers.

Results

A total of 381 out of 382 selected mothers have responded to the questionnaire (nearly 100% response rate). As shown in table 1, majority of the households in both groups were rural, male-headed, farmers by occupation, Islam in religion, and Gurage by ethnicity. Age of the study population ranged from 16 to 46, the mean (SD) and median being 29.03 (+5.5) and 29 years respectively. The mean age (SD) of cases and control groups was 28.42 (5.46) and 29.62 (5.53) years respectively. The mean and median annual household income was found to be 1049.70, and 600 birr (range 200.00 to 10000.00 birr), with 75 percentile being 1000.00 birr. The mean annual household income was found to be 1236.97 birr, (range 200.00 to 10000.00 birr) for cases; and 856.93 birr, (range 200.00 to 10000.00 birr) for control households. The difference in mean annual household income between the two groups was 380.03 Birr per annum ($p < 0.05$). The mean (SD) walking distance from nearest health institutions reported in minutes were 49.24 (40.3) for the cases and 60.13 (50.5) for the controls. The mean (SD) difference in walking distance between the two study groups was 10.89 (10.2) minutes, which is statistically significant ($p < 0.05$).

Table 1: Socio demographic characteristics of study participants, Meskan and Mareko Districts, Ethiopia, 2004.

| Variables | Cases (n=190) N (%) | Controls (n=191) N (%) | Total (n=381) N (%) |
|--|---------------------------|---------------------------|------------------------|
| Sex of head of household | | | |
| Male | 183 (96.3) | 183 (95.8) | 366 (96) |
| Female | 7 (3.7) | 8 (4.2) | 15 (4) |
| Age of the mother | | | |
| Means (SD), rang | 28.42 (5.46), 17-43 | 29.62 (5.53) 16-46 | 29.03 (5.52) |
| <20 | 5 (3.1) | 4 (2.4) | 9 (2) |
| 20-34 | 124 (76.1) | 123 (72.4) | 247 (65) |
| >34 | 34 (21.8) | 43 (25.3) | 77 (20) |
| Family size of the household | | | |
| Means (SD), range | 5.48 (1.92), 2-14 | 5.88 (1.76) 2-11 | 5.68 (1.85) |
| 1-4 individuals | 64 (34) | 51 (27) | 115 (31) |
| 5 or more individuals | 126 (66) | 140 (73) | 266 (70) |
| Occupation head of household | | | |
| Farmer | 142 (74.7) | 173 (90.6) | 315 (82.7) |
| Merchant | 20 (10.5) | 12 (6.3) | 32 (8.4) |
| Other | 28 (14.6) | 6 (3.1) | 34 (8.9) |
| Place of residence | | | |
| Urban | 47 (25) | 15 (8) | 62 (16) |
| Rural | 143 (75) | 176 (92) | 319 (84) |
| Religion | | | |
| Muslim | 148 (78) | 158 (83) | 306 (80) |
| Orthodox Christian | 31 (16.3) | 29 (15) | 60 (16) |
| Others | 11 (5.7) | 4 (1.8) | 15 (4) |
| Ethnicity | | | |
| Gurage | 137 (72) | 142 (74) | 279 (73) |
| Silti | 42 (22) | 38 (20) | 80 (21) |
| Others | 11 (5.8) | 11 (5.7) | 22 (6) |
| Marital status | | | |
| Married | 186 (98) | 156 (81.7) | 342 (90) |
| Widowed/Divorced | 4 (2) | 15 (7.8) | 19 (5) |
| Educational status of mothers | | | |
| Illiterate | 130 (68.4) | 120 (63) | 250 (66) |
| Read and write | 28 (14.7) | 88 (46.1) | 116 (31) |
| Formal education | 91 (47.9) | 43 (22.5) | 134 (35) |
| Educational status of husband | | | |
| Illiterate | 71 (37.4) | 60 (31.4) | 131 (35) |
| Read and write | 28 (14.7) | 28 (14.7) | 56 (15) |
| Formal education | 91 (47.9) | 60 (31.4) | 151 (40) |
| Annual household income (in Birr) | | | |
| Mean SD; Range | 1236.97 (1512); 200-10000 | 856.93 (1087); 200-10000 | |
| <500 | 30 (15.8) | 36 (18.9) | 66 (17) |
| 500-1500 | 81 (42.6) | 90 (47.1) | 171 (45) |
| >1500 | 30 (15.8) | 11 (5.8) | 41 (11) |
| Walking distance of nearest Health facility | | | |
| Mean (SD), | 49.24 (40.3), | 60.13 (50.5) | |
| < 1 hour | 98 (52) | 86 (45) | 184 (48) |
| > 1 hour | 62 (32) | 98 (51) | 160 (42) |

Significant differences exist between cases and controls with respect to place of residence, mother's education, father's education, occupation of heads of households, annual household income, and walking distance from nearest health institutions (table 2). Mothers who used services were more 3.86 times more likely to be urban residents than controls ($\chi^2=18.71$, $p<0.001$), have some

education with the odds of having formal education to be 2.81 times higher for cases than controls ($\chi^2=12.41$, $p<0.001$). Having a non-farmer household head ($\chi^2=13.22$, $p<0.001$) and higher annual household income ($\chi^2=10.33$, $p<0.01$) were also shown to be associated with service use.

Table 2: Association of Socio-demographic and socio-economic factors of the study population with utilization of health services, Meskan and Mareko Districts, Ethiopia, 2004.

| Variables | Utilization | | OR (95% CI) |
|------------------------------------|---------------|--------------|----------------------|
| | Cases (n=190) | Cont (n=191) | |
| Sex household head | | | |
| Male | 183 | 183 | |
| Female | 7 | 8 | 1.14 (0.41, 3.22) |
| Mother's age | | | |
| Below 35 yrs. | 129 | 133 | |
| 35 and above | 34 | 43 | 1.23 (0.74, 2.04) |
| Place of residence | | | |
| Urban | 47 | 15 | |
| Rural | 143 | 176 | 3.86 (2.07, 7.19)*** |
| Mother's Educational status | | | |
| Have formal education | 47 | 20 | |
| No formal education | 143 | 171 | 2.81 (1.59, 4.96)*** |
| Father's Educational status | | | |
| Have formal education | 91 | 60 | |
| No formal education | 99 | 130 | 1.99 (1.31, 3.02)** |
| Occupation | | | |
| Non-farmer | 47 | 18 | |
| Farmer | 142 | 171 | 2.89 (1.64, 5.1)** |
| Annual Income | | | |
| 1000 or more | 63 | 35 | |
| Less than 1000 | 78 | 102 | 2.35 (1.42, 3.91)** |
| Walking distance | | | |
| < 1 hour | 98 | 86 | |
| > 1 hour | 62 | 98 | 1.8 (1.17, 2.77)* |

Note - *-Significant at $p < 0.05$, **- significant at $p < 0.01$, *** significant at $p < 0.001$

Factors that showed significant association with utilization were further tested by multinomial logistic regression analysis. Accordingly, among all socio-demographic and socio-economic factors: urban residence ($\chi^2=9.96$, $p < 0.01$), average annual income more

than 1000 birr ($\chi^2=6.67$, $p < 0.05$), mothers' education ($\chi^2=8.57$, $p < 0.05$), and <1 hour walking distance from a health facility ($\chi^2=4.96$, $p < 0.05$), remained to be significantly different among cases and controls (Table 3).

Table 3: Multinomial logistic regression of socio-demographic, socio-economic and health service factors, Meskan and Mareko Districts, Ethiopia, 2004.

| Variables | Cases (n=190) | Cont (n=191) | Crude OR (95% CI) | Adj. OR (95% CI) |
|------------------------------------|---------------|--------------|----------------------|---------------------|
| Place of residence | | | | |
| Urban | 47 | 15 | | |
| Rural | 143 | 176 | 3.86 (2.07, 7.19)*** | 3.05 (1.53, 6.12)** |
| Mother's Educational Status | | | | |
| Have formal education | 47 | 20 | | |
| No formal education | 143 | 171 | 2.81 (1.59, 4.96)*** | 2.45 (1.27, 3.89)* |
| Father's Educational status | | | | |
| Have formal education | 91 | 60 | | |
| No formal education | 99 | 130 | 1.99 (1.31, 3.02)** | 1.27 (0.78, 2.1) |
| Occupation | | | | |
| Non-farmer | 47 | 18 | | |
| Farmer | 142 | 171 | 2.89 (1.64, 5.1)*** | 1.64 (0.57, 4.77) |
| Annual Income | | | | |
| 1000 or more | 63 | 35 | | |
| Less than 1000 | 78 | 102 | 2.35 (1.42, 3.91)** | 2.02 (1.18, 3.43)* |
| Walking distance | | | | |
| < 1 hour | 98 | 86 | | |
| > 1 hour | 62 | 98 | 1.8 (1.17, 2.77)* | 1.65 (1.06, 2.55)* |

Note - *-Significant at $p < 0.05$, **- significant at $p < 0.01$, *** significant at $p < 0.001$

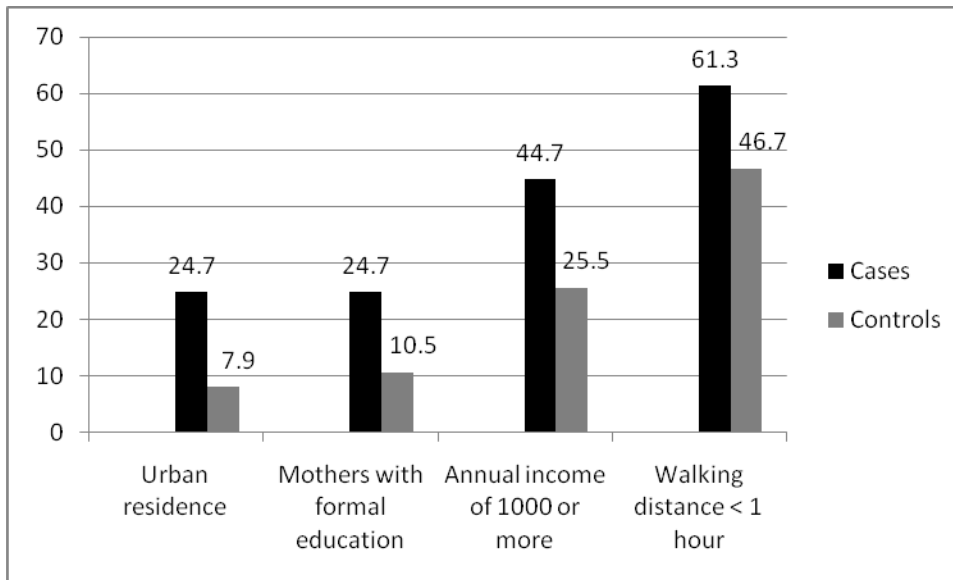


Figure 1: Determinants of health service utilization, Meskan and Mareko Districts, Ethiopia, 2004.

Discussion

This study reveals that there were significant differences between cases and controls with respect to place of residence, with mothers who used antenatal care services being 3.86 times more likely to be urban residents than mothers who did not use services ($\chi^2=18.71$, $p<0.001$). This finding is similar with other studies that reported that mothers from urban areas are more likely to use health services than their rural counterparts (14-16). This may be explained by the fact that urban women tend to have better access to health facilities and other promotional activities that are urban based as well as to formal education.

Mothers' and husbands' education were also found to be associated with health service utilization with mothers who used services and their husbands being 2.81 and 1.99 times respectively more likely to have had some education, even though only mothers' education was significant in the multinomial regression ($\chi^2=8.57$, $p<0.05$). This may be attributed to the fact that educated women have greater access to modern health care, have a better understanding of the benefits as well as being more willing to use health services. Several studies from other developing countries have reported similar findings (16-21).

Occupation of heads of households was also associated with service use as cases were 2.89 times more likely to be non-farmers than controls ($\chi^2=13.22$, $p<0.001$) in the bi-variate analysis. Even though this difference can be explained by the fact that the majority of urban residents (who are non-farmers) also have better access to facilities than their rural counterparts, the difference was not significant in the multinomial logistic regression.

Regarding household income, cases were 2.35 more likely to have average annual income level of more than 1000 birr than controls. This association may be because

of the significant amount of indirect and intangible service cost, though the direct service cost is free, that can hinder the lower income group from using the service, as also shown in many other studies (16, 17, 21-23).

Distance from health facilities was also associated service utilization in that cases were more likely to be from a walking distance of less than an hour ($\chi^2=6.67$, $p<0.05$). This can be due to the fact that with increasing distance from health facilities, there is associated increase in transportation cost and lost production time, as well as possible lower exposure to health information, as also shown in the findings of other studies (24, 25).

In conclusion, this study revealed that place of residence, average annual income, mothers education, distance from a health facility were determinants to the utilization public health programs. The data for this study is almost seven years old and it is true that the health system in Ethiopia (and that of Butajira) has undergone significant changes since the time of the study. However, most of the factors that affect health service utilization still remain the same. This is shown by EDHS 2011 that reported "Only 34% percent of women who gave birth in the five years preceding the survey received antenatal care from a formal health services for their most recent birth" (26). Therefore, it still valid to make recommendations based on the findings and conclusions of the study that include providing outreach services for people in low utilization areas and enhancing awareness for utilization of maternal and child health services.

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