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THE ROLE OF TRANSPORTATION IN ACCESSING MATERNAL HEALTH SERVICES: A CASE STUDY OF SUMBRUNGU HEALTH CLINIC

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ABSTRACT: *The significant contribution of transportation in accessing maternal health service to development and the livelihoods of poor pregnant women in rural areas are widely recognised. However, developing countries are yet to fully acknowledge and understand the role of transport in accessing maternal health services and improving poor people's health. In the context of the need to step up development activity to meet the Millennium Development Goals, a better understanding of the link between transportation and maternal health services becomes a priority. The research focused on the ways in which transport and road infrastructure play in the overall delivery of and access to maternal health services, and in the effectiveness of the health referral process. Many households do not have the reliable, suitable, and affordable transport services that are essential for access to care during the critical prenatal and neonatal periods. Emergency access to maternal health care is also critical because many pregnant-related complications are unpredictable and many women spend excessive time trying to reach a health facility with the capacity to treat obstetric or infant complications. Various financial, social, infrastructural and institutional factors of supply and demand can impose severe constraints on the effectiveness of transport as such; poor families often cannot afford the cost of transport to health facilities. As a consequence, walking remains the primary mode of transportation for pregnant women thereby severely limiting their ability to reach needed care.*

KEYWORDS: Transportation, Maternal Health, Health Services and Clinic

INTRODUCTION

Transportation facilitates the timely and affordable delivery of basic health, education, water and sanitation services, it connects communities to markets and information, and can empower vulnerable groups. Nonetheless, developing countries are yet to fully acknowledge and understand the role of transport and mobility in improving poor people's health and maternal health. Although transportation plays a critical role in the effective and efficient delivery of maternal health services, it also enables people to access services and health workers to reach communities, especially in sparsely populated rural areas. The study area is of interest because of how sparsely populated the area is and there is the need for link between transportation and maternal health.

It is of this view however that the World Health Organisation in their quest to support government undertook a research which estimated that 75 per cent of maternal deaths can be prevented through timely access to child-birth related care (WHO, 2001). And also timely access to care also helps reduce other long term maternal health problems and this research is intended to examine how transport can play a role in accessing maternal health and to reduce maternal mortality by 75% as projected by the government and the transport ministry in achieving the millennium development goal by 2015. The study looks at transport infrastructure and services and how transport services help to improve the livelihoods of poor people living in rural areas and to access transport affordability to timely attainability of the basic necessities related to maternal health care in the area of study and the country as whole.
The inclusion of both maternal and child mortality reduction as the Fourth and Fifth Millennium Development Goals (MDGs) has stimulated increased attention to multi-sectorial nature of these challenges. The transport sector has a critical role to play in achieving these MDGs.

Reducing maternal mortality by three-quarters from its 1990 level is the fifth MDG. The maternal mortality ratio and the proportion of deliveries with a skilled attendant are used to monitor progress towards this goal. Death from pregnancy-related cases represents one of the most preventable categories of female death worldwide. Currently, the level of risk for a woman to die of pregnancy-related cause shows the widest disparity between developed and developing countries of all human development indicators.

The literature shows that in low income countries, particularly in rural areas, considerable time is spent by women and their families in waiting for transportation and travelling to health facilities. In addition, poor roads, few vehicles and high transportation costs are major causes of delay in decisions to seek and reach emergency obstetric and postnatal care. Babinard and Roberts, (2006) focuses on the role of transport and road infrastructure in the delivery of and access to maternal and child health services, and in the effectiveness of the health referral process in developing countries. It finds that many households do not have reliable, suitable, and affordable transport services essential for access to care during critical per natal and neonatal periods. They point out that emergency access to care is particularly vital for women and children because many childbirth-related complications are unpredictable and the majority of births in developing countries take place at home.

Research Objective

The research was set to achieve the following objectives;

1. To examine how effective and efficient transportation is in the health sector of Sumbrungu clinic in the Sumbrungu community.
2. To explore the effectiveness and efficiency of responses to maternal referral cases to the Bolgatanga Regional Hospital.
3. To determine the link between transport and maternal health of the Sumbrungu community.
4. To examine how health transport vehicles are managed and operated at Sumbrungu clinic.

Research Questions

The research sought to address the following research questions;

1. How effective and efficient is transportation to maternal health care?
2. Is response to maternal referral cases effective and efficient?
3. How transport vehicles are managed and operated in the delivery of maternal health services?

Research Problem

The study sought to bring to light the needed support and attention that should be placed on transportation in accessing maternal health to reduce maternal mortality rates and to save the livelihood of women in the Sumbrungu community and the country at large. This will inform the government and NGO's the need to construct motorized roads in the Sumbrungu community to ease maternal health services through transportation. The need to create and post more health personnel to the health clinic of the Sumbrungu community to ensure problems relating to maternal health services are reduced if cannot be eradicated

LITERATURE REVIEW

Transportation

Chopra and Meindl, (2007) defined transportation as the movement of products from one location to another as it makes its way from the beginning of a supply chain to the customer. Transportation is the physical link connecting companies, channel members and people from one point of station to another.

Maternal Health Service

They are health services given to women during pregnancy, childbirth, and the postpartum period. It encompasses the health care dimensions of family planning, preconception, prenatal, and postnatal care in order to reduce maternal morbidity and mortality.

Maternal Mortality

International Statistical Classification and Related Health Problems (IDC), defined maternal death as "the death of a woman while pregnant or within forty-two days of the end of the pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes" (WHO 2004).

Preparing for Delivery

Birth-preparedness and complication readiness is a comprehensive strategy to improve the use of skilled providers at birth and to prepare for an emergency. Birth-preparedness and complication readiness include: (a) knowledge of danger signs; (b) plan for where to give birth; (c) plan for a birth attendant; (d) plan for transportation; and (e) plan for saving money. A district-based model service-delivery system implemented in Koupéla, Burkina Faso, (2001-2004) included a birth-preparedness and complication readiness approach. A cross-sectional survey with a random sample of respondents was conducted to measure the impact of birth-preparedness and complication readiness on the use of skilled providers at birth. Of the 180 women who had given birth within 12 months of the survey, 46.1% had a plan for transportation, and 83.3% had a plan to save money. Women with these plans were more likely to give birth with the assistance of a skilled provider.

Improving Access to Transport Services

A number of initiatives have been set up to provide alternative transport for women needing emergency obstetric care when health sector resources are limited. In Malawi, Mali, Nigeria and other African countries motorcycle ambulances take women from remote villages to health facilities, transport passengers between health centres and district hospitals, and supply medical equipment and essential drugs. For example, in the Southern region of Malawi, eRanger project delivered three Motorcycle, Ambulances for the safe transportation of pregnant women to

clinics or hospitals. The ambulances have transportation times comparable to four wheeled ambulances, but with considerable savings in terms of initial purchase cost and on-going maintenance.

Working with existing transport networks is another way of improving access to transport. A safe motherhood network in Kebbi, Nigeria, enlisted the support of a local bus drivers' union whose members agreed to provide transportation for women with obstetrical emergencies. Drivers received training in how to transport emergency cases and reimbursement for fuel costs from a fund created by community members.

Maternal and Neonatal Care

Empirical evidence from developing countries that quantifies the availability and access to transport for health reasons is scarce. However, research in this area shows that several factors explain how poor transport constitutes a major barrier for women and children to access adequate medical care, particularly emergency care, at a health facility. The primary mode of transportation for women in labour remains walking, and care-seeking practices often reflect the fear of delivery en route, the physical hardships of travelling in such a state, and cultural practices (Rose et al. 2001).

Transport Related Costs.

Transport related costs can be a primary factor in deterring patients from obtaining treatment. Even when a vehicle can be obtained, costs can be prohibitive and not even related to distance (Shehu et al. 1997). Studies carried out in Burkina Faso and north-east Brazil show that transport costs accounted for 28 percent and 25 percent, respectively, of the total patient costs of using hospital services (Ensor and Cooper, 2004). A study in Bangladesh suggested that transport was the second most expensive item for patients after medicines (Ensor and Cooper, 2004).

Prolonged Travel Time and Distance

Location and poor transport often impose important opportunity costs in terms of time on both patients and relatives, particularly during peak periods of economic activity such as harvest time. Excessive time and distance can influence patients not to seek care at a health institution and can also be a contributing factor to why women choose to deliver at home rather than at a health facility (Chisembele 2001; Bale et al; 2003). In Zambia, a recent review showed that although 96 percent of respondents would have preferred to deliver in a clinic, only 54 percent actually did so. A key contributing factor was long distance, with 50 percent of the women having to walk for two hours or more to reach a clinic and only 35 percent of those living more than two hours away delivering at a health institution compared with 71 percent of those living within two hours walking distance (Stekelenburg et al. 2004).

Limited Access and Unreliable Transport.

In addition to bearing a negative impact on service utilization, poor access and lack of reliable transport also explain why families delay seeking care in an emergency situation or arrive too late at health facilities for effective treatment. In Zambia, a study conducted between 1998 and 2000 showed that 76 percent of the women had to walk to the clinic to receive care and 50 percent had to walk for two hours or more. While 71 percent of those living within two hour walking distance delivered in a health institution, only 35 percent of those living further away did (Stekelenburg et al. 2004).

Lack of ambulances and shortage of other means of transport in remote areas also delay the management of life-threatening complications, particularly on non-market days or during the rainy season (Shehu et al; 1997).

Inadequate Neonatal Transport Services.

Although evidence is scarce, it is estimated that shortage or lack of transport specialized in meeting the needs of new-born or premature children with a critical illness can significantly contribute to neonatal mortality. New-born or premature children who are required to be quickly and safely transferred to a different health facility or specialized neonatal intensive care unit have particular needs while in transit. In most cases, however, developing countries lack well-functioning and suitably equipped vehicles and, when equipment is available, the transport team is often not adequately trained to be able to use it effectively. Specialized transport equipment for new-born that is not available includes proper-sized bags and masks, mobile incubators, monitors, equipment for temperature regulation, or transport ventilators (Kazemian et al. 2004).

Transport in the Health System and Referral Network

In the referral system, transport facilitates access to both preventive and emergency care, which can be provided at the various care levels of the system either in the community or at a health care facility such as a health centre or a district or national hospital. Once at a facility, the triage process in the pre-hospital subsystem determines which patients get transported to the facility with the adequate level of care. Recent attempts at measuring the costs of interventions necessary to strengthen health systems, such as the WHO-CHOICE database, and in particular the costs of extending coverage of maternal and new-born care, show that extending coverage for 75 countries would push current levels of expenditure from $US1 billion in 2006 to US$6.1 billion in 2015 (WHO, 2005). Transport requirements within the health system are estimated to represent 5 percent of the needed increase.

RESEARCH METHODOLOGY

Data obtained from questionnaire administered to the sampled population was the source of primary data. Systematic structured questionnaires and personal interviews were used to collect data from respondents. A demographic group comprising of mothers and pregnant women of the Sumbrungu Community and staffs at the Sumbrungu Health Clinic were used in this research. A total of fifty mothers and pregnant women and staffs were sampled. To ensure the quality of data, the participants were to have been permanent community mothers and pregnant women and permanent staff at the health clinic.

A systematic random sampling method was used to collect data from mothers and pregnant women with their permission and also permission from the officer in charge of the Sumbrungu Health Clinic. Qualitative and quantitative data has been analyzed by means of the statistical package for social services (SPSS) and Microsoft excel. This is necessitated by the fact that the analyzed quantitative data ought to be presented by graphs to give a quick visual impression of what it entails. SPSS, which is software specially designed for processing data into a pictorial form, has therefore seen essential for this study. Quantitative data gathered were analyzed using charts and frequency distribution tables to present the results. Also, excel was used in instances where it is difficult to import certain data format to the SPSS work environment. Qualitative data on the other hand has been analyzed critically by means of empirical judgment.

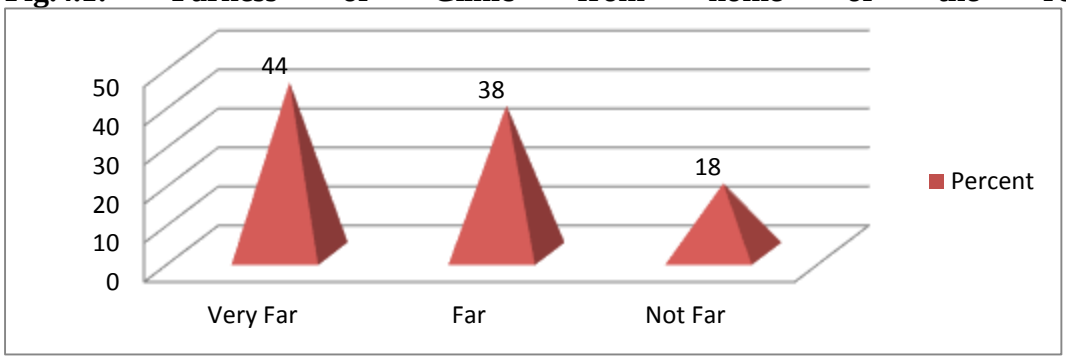
Limitations of the Study

Financial constraint was a limiting factor as the researcher travelled to the Sumbrungu health clinic in gathering information for the research. Furthermore, the researcher was constrained with time due to lectures, examination and assignment given by lecturers at the school. Another constrain was the unwillingness to give information by respondents as a result of their busy schedules and cultural norms.

RESULTS AND DISCUSSION

Farness of Clinic from home

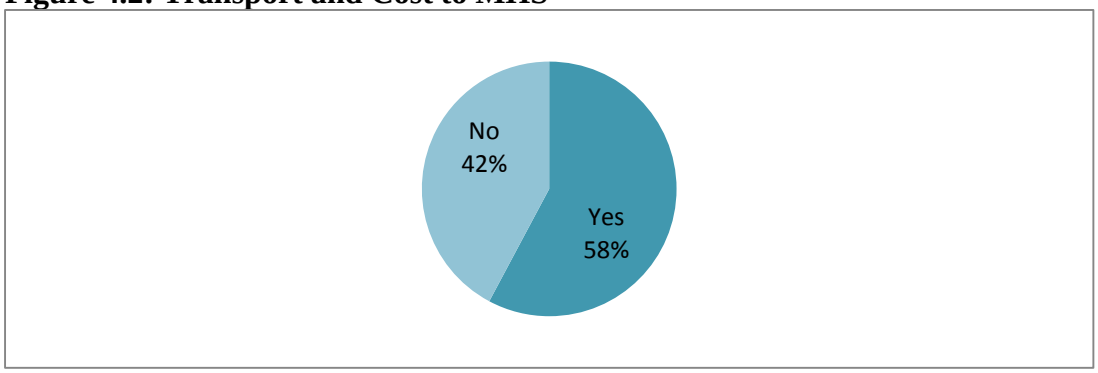
Fig.4.1: Farness of Clinic from home of the respondents



Source: Researcher's Field Survey, June 2013

Out of the 45 responses from pregnant women and mothers as depicted in figure 4.1, most women will prefer to deliver at home due to the distance factor. Likewise in (Chisembele 2001; Bale et al; 2003) it is realised that excessive time and distance can influence patients not to seek care at a health institution and can also be a contributing factor to why women choose to deliver at home rather than at a health facility.

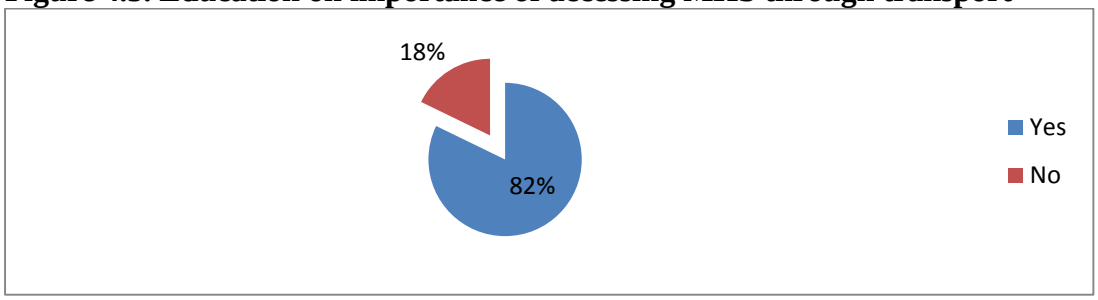
Figure 4.2: Transport and Cost to MHS



Source: Researcher's Field Survey, June 2013

From figure 4.2 above, majority of the respondents indicated that transport cost is an element that prohibits them from accessing maternal health services and this goes in line with what (Shehu et. al.1997) said "transport related costs can be a primary factor in deterring patients from obtaining treatment even when a vehicle can be obtained, cost can be prohibitive and not even related to distance".

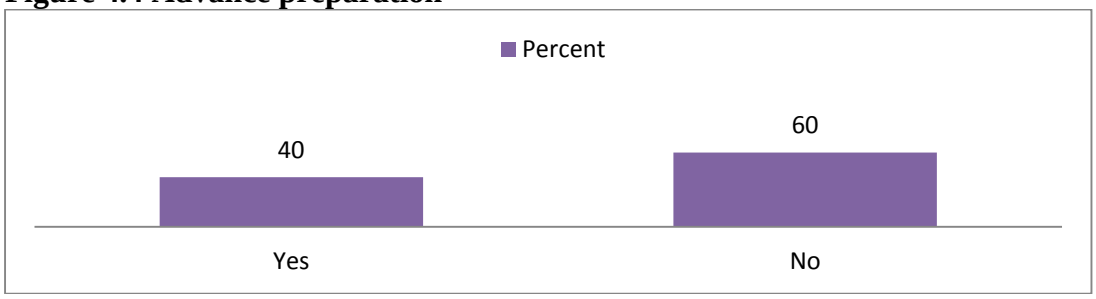
Figure 4.3. Education on importance of accessing MHS through transport



Source: Researcher's Field Survey, June 2013

Analysis from figure 4.3 depicts that majority of the respondents were educated on the importance of accessing MHS through transportation which resulted in reduced maternal mortality in the community.

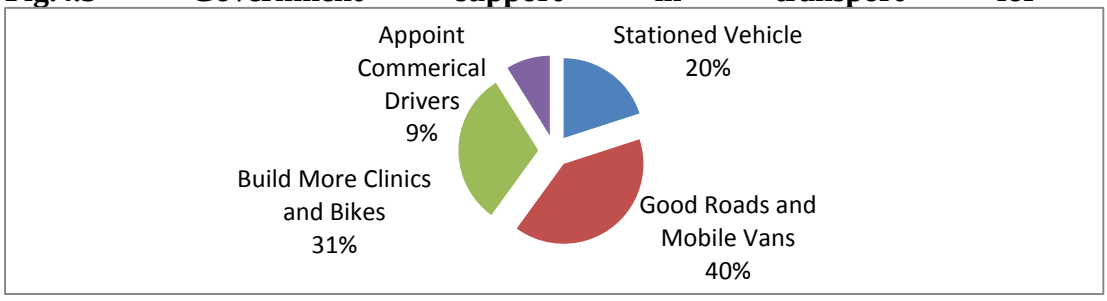
Figure 4.4 Advance preparation



Source: Researcher's Field Survey, June 2013

As depicted in figure 4.4, 40% of the responses gathered shows that they respondents made advance preparation for transportation meanwhile 60% of the respondents said that they did not make any advance preparation for transportation while pregnant. Due to these facts gathered, when complications arise it can result in maternal mortality as that will be when to start looking for transport.

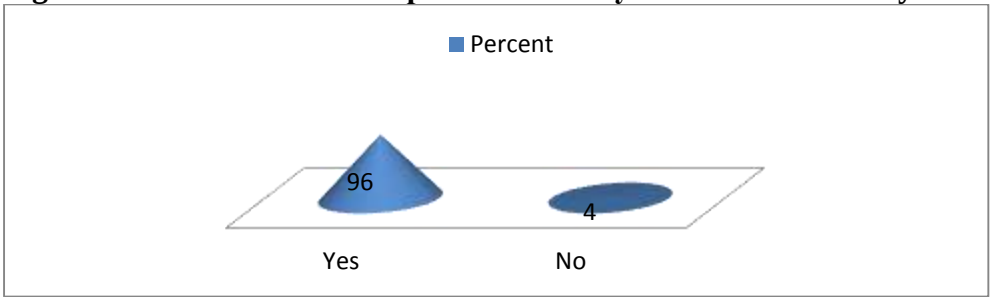
Fig.4.5 Government support in transport for MHD



Source: Researcher's Field Survey, June 2013

As depicted from the figure 4.5 above, most of the respondents are of the view that government should construct good roads and provide them with mobile vans, 31% said more clinics and easy access to motto bikes will solve the challenge, 20% said government should provide a stationed ambulance at the clinic and 9% said government should appoint commercial driver through the elders of the community to remedy the challenges facing the community. All these put in place; the maternal mortality rate will be reduced as to meet the Millennium Development Goal by 2015.

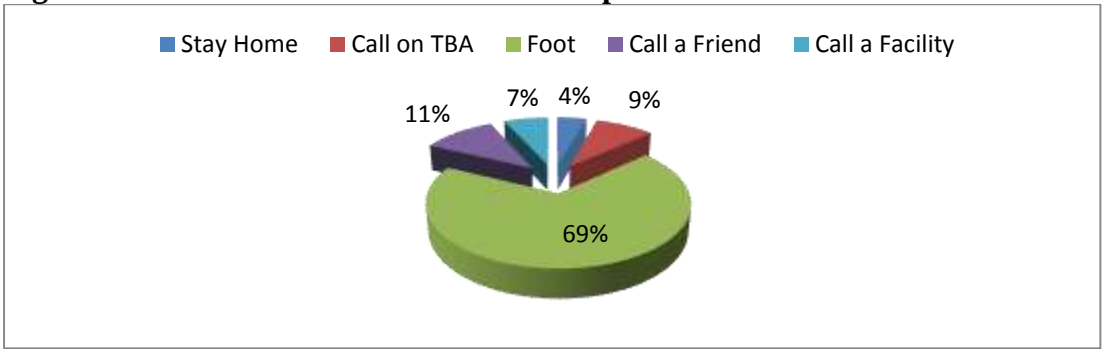
Figure 4.6 Awareness of Complication when you don't access early MHS



Source: Researcher's Filed Survey, June 2013

As shown in figure 4.6 above, a greater number of respondents are aware and have the knowledge of complication when it does occur and as such report such situations to the nearest health facility to reduce maternal death.

Figure 4.7: When there is no means of transport



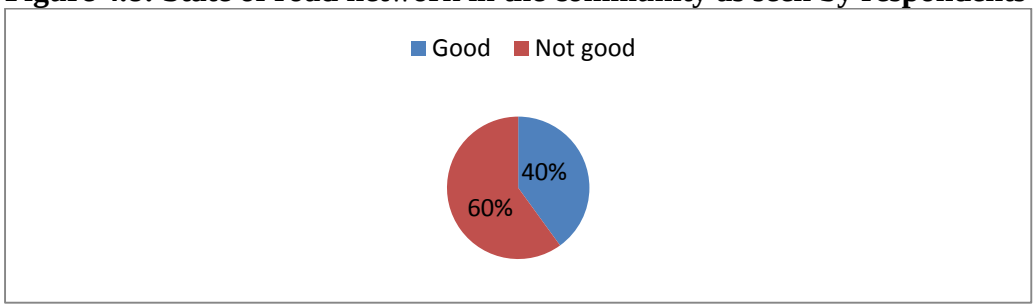
Source: Researcher's Filed Survey, June 2013

From the analysis gathered in the field as shown in figure 4.7 above, majority of the respondents said the only way out to get to the health facility when there is no means of transport is to foot which cites with (Rose et al. 2001) "the primary mode of transportation for women in labour remains walking, and care-seeking practices often reflect the fear of delivery en route, the physical hardships of travelling in such a state, and cultural practices".

Staff composition and size at the health clinic

The ranks of the staffs at the clinic who responded are as follows: Midwives, Senior Community Health Nurses and Community Health Nurses. With these categories of staff at the clinic, majority is of the point that they were enough to take care of the maternal health needs of the community.

Figure 4.8: State of road network in the community as seen by respondents

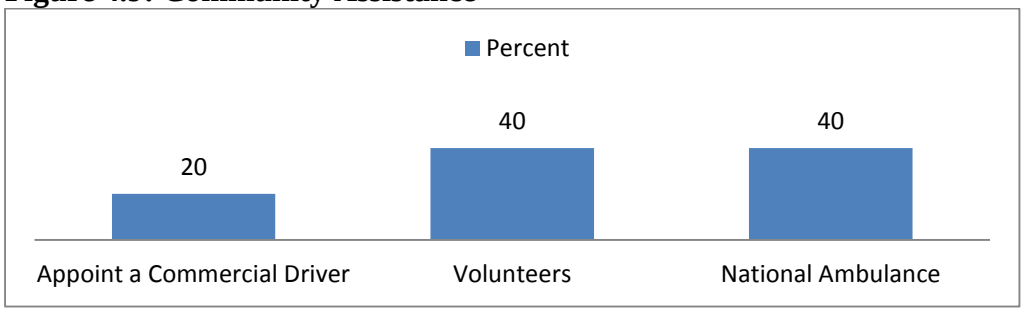


Source: Researcher's Field Survey, June 2013

A majority (60%) of the respondents said the road network is not good as shown in figure 4.8 above and that there is the need for more improvement. In line with this, Borghi et al (2004) found that the average time it took women to travel to a health facility for delivery in Nepal was 2.8 hours, increasing significantly in the more mountainous regions.

From the researcher's field observation it is realized that the road network is actually not in good condition in relation to the maternal and other health needs of the community.

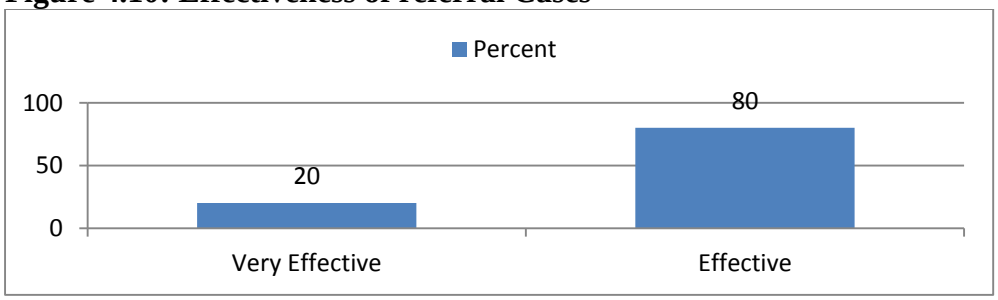
Figure 4.9: Community Assistance



Source: Researcher's Field Survey, June 2013

From the responses gathered, it came out that the community can assist in a number of ways in facilitating the transportation of maternal cases to the health facilities; as shown in figure 4.9above.Most of the respondents said community members can be of help by calling on the Community Health Volunteers who have means of transport or who can easily organize some to transport maternal cases and also to call the National Ambulance services.

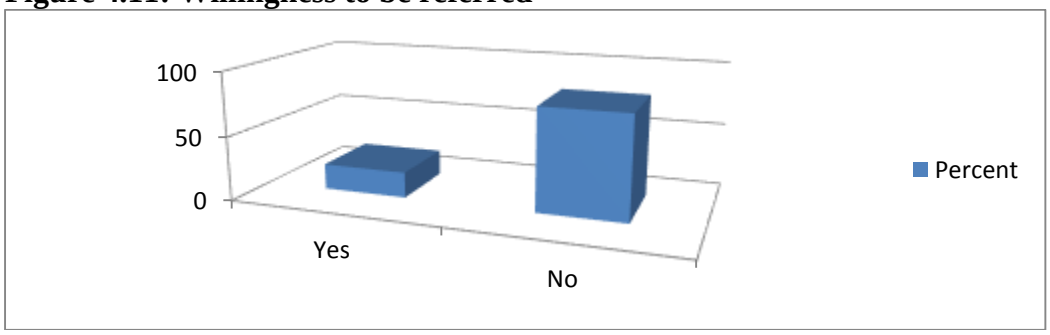
Figure 4.10: Effectiveness of referral Cases



Source: Researcher's Field Survey, June 2013

Majority (80%) of the respondents as indicated in figure 4.10 shows that referral cases to higher facilities are effective and this gives a good indication towards the attainment of the Millennium Development Goal by 2015.

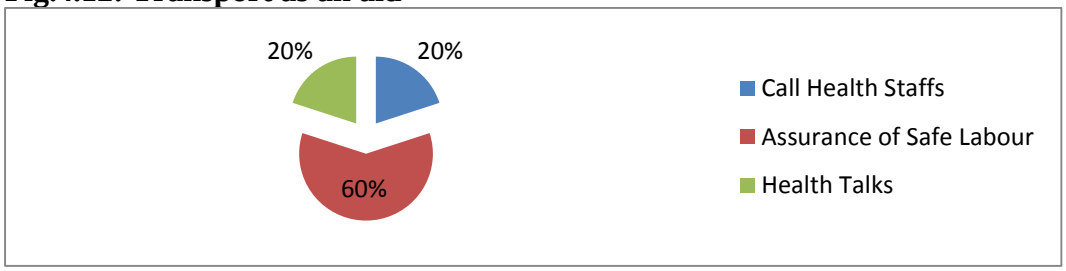
Figure 4.11: Willingness to be referred



Source: Researcher's Field Survey, June 2013

Majority (80%) of the women are mostly not willing to be referred as shown in the above figure 4.11, because of the transport cost and other charges levied at the health facilities.

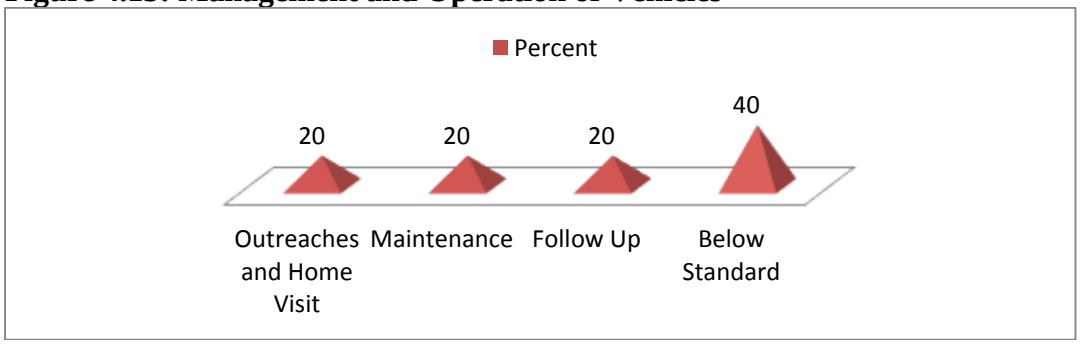
Fig.4.12: Transport as an aid



Source: Researcher's Field Survey, June 2013

As analyzed in figure 4.12, 60% of the respondents said through transport they are able to assure their clients of safe labour whereas 20% said they give their clients health talks and to call health staffs when the need arises respectively.

Figure 4.13: Management and Operation of Vehicles

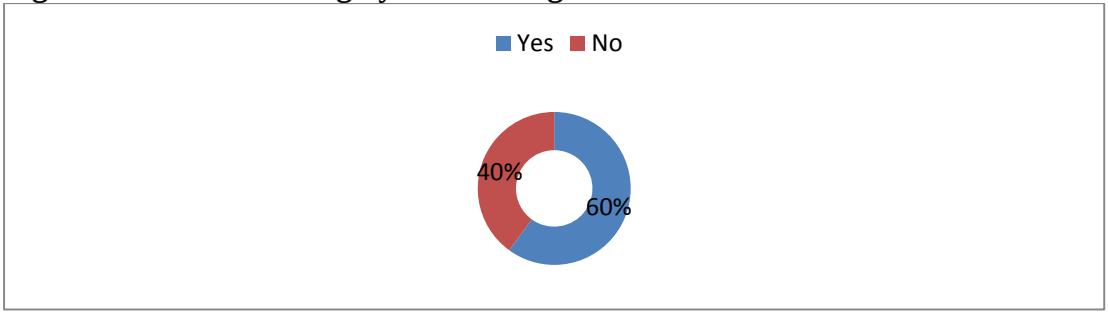


Source: Researcher's Field Survey, June 2013

From figure 4.13, majority of the respondents indicated that the management and operation of health vehicles were below standard and in citing with (Gauthier 2005) where Vehicles are commonly diverted to meet staff needs or other illegitimate purposes until they are no longer operable. If no specific personnel or budget is allocated in order to replace and maintain the

vehicle fleet, countries can be burdened with aging vehicle fleet, which can result in increasing fuel consumption and repair and maintenance costs.

Figure 4.14: Cost bearing by staff during home visit



Source: Researcher's Field Survey, June 2013

The figure 4.14 above depicts that most of the respondents (60%) bear some form of cost during home visits and this comes when there is a breakdown with the mode of transport being used and should be refunded to encourage them continue with outreaches in the community.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary of the research findings, conclusions and recommendations based on the research results. The aim of the study is to examine the role of transportation in accessing maternal health services in the Sumbrungu community of the Upper East Region based on the objectives set and the results in the preceding chapter.

SUMMARY

- It is evident from the findings and literature review that pregnant women and mothers lived very far from the health clinic and as such transportation cost is a factor mostly preventing them from accessing maternal health services.
- It is realized from the findings that most of them were educated on the importance of accessing maternal health services through transportation and this will help reduce maternal mortality rate.
- Findings indicate that, majority of the pregnant women and mothers do not make any advance preparation for transportation whilst pregnant.
- The study further revealed that government can support in transport for maternal health delivery by constructing good roads and providing mobile vans, having a stationed vehicle at the health post, building more clinics with bikes availability and appointing a commercial drivers to transport maternal cases when the need arises.
- Majority of the respondents depicts that the road network of the community is not good as the way it should be.
- The study also makes it evident that the community has an important role to play in transporting maternal cases so as to reduce mortality rate in the community.
- It is evident from the findings that referral cases to higher facilities are effective and less very effective but most women are not mostly willing to be referred.
- Most of the staff testified that transportation aided them in educating women on maternal health services in the community whereas the management and operation of health vehicles is below standard.

CONCLUSION

Reliable, suitable and affordable transport plays a key role in enabling expectant mothers and newborn children to receive vital health care and in encouraging families to seek this care. However, there are various financial, social and institutional factors of supply and demand that can severely limit, both directly and indirectly, the effectiveness of transport in delivering and accessing maternal health services, particularly in less developed countries. In addition, access to health services by women and their infants is limited by factors that can "delay" access and include a family's decision to seek care, the availability of suitable transport, and the perceived availability and quality of services at the relevant health facility.

In under-served rural or peri-urban areas of developing countries, transport can be inefficient in helping families reach health facilities and thereby create a major delay in accessing care, which can be particularly deleterious when access to emergency care is needed. Inefficiencies in transport can be caused by very limited services and slow travel times by various transport modes operating on roads in poor conditions. Moreover, poor families are often not able to afford the cost of transport to health facilities. As a result, for many women and their infants walking is the only means by which they can reach health facilities. In some countries, private transport is accepted and can be reimbursed by the health sector. However, when the poor are left to pay for their own transport, there are important issues of equity regarding affordability and access to essential services.

In some locations, which are inaccessible to conventional motor vehicles or where there is inadequate demand to sustain a regular motor transport service, alternative forms of transport have been used with some success. The lower capital and operating costs of bicycle or motorcycle ambulances have helped some communities operate their own services. These operations have generally been developed on a multi-purpose basis in order to complement the infrequent transport demand for health purposes. In some rural areas, improvement of the road network may be needed to facilitate access to key health services. However, for community transport arrangements to be sustained, the full costs of such community services must be recovered, raising issues of local institutional capacity, equity and affordability.Communications can significantly increase the utilization rate and response time of transport vehicles in areas with low population density, thereby strengthening transport provision in underserved areas, particularly when providing an emergency response.

RECOMMENDATIONS

1. Transport interventions must be implemented flanking other initiatives to increase the demand for services.
Transport is a single component in the complexity of issues surrounding the accessibility of prenatal and emergency obstetric care. The use of transport to access services differs by ethnicity, caste, economic status and gender. Other factors such as the perceived quality of care, the cost of services, and the ability to recognize complications are also important factors that affect the demand for transport and utilization of health services.

2. Governments and non-governmental organizations need to work with communities to identify obstacles to transport and the most suitable ways of overcoming these.
When communities are involved in planning for emergencies, including the preparation of delivery plans, mobilizing resources, and strengthening the referral chain, they are less likely

to delay the decision to seek care. The participation of communities also means that transport arrangements are appropriate and socially acceptable. The factors that affect women's decision and ability to use transport to access maternal health services are context specific. This means that scaling up or replicating successful interventions may not work unless these complex social and cultural factors are taken into consideration.

3. Transport should be affordable and financially sustainable

Community saving schemes has been useful ways of sharing the costs of transportation during emergencies, although problems have occurred when funds are depleted. Some women may be excluded from these schemes if they cannot afford to contribute towards them. It is important to ensure that policies and interventions reduce, rather that perpetuate existing inequities in access to services. It is the responsibility of local and national governments to target interventions such as providing free emergency transportation for the poorest people.

4. Interventions should be planned as part of a long-term
Integrated health and transport strategy

Maternal health and transportation systems are interdependent and must by planned and implemented together, along with communication systems to connect all levels of care. Strengthening transportation and referral systems may be rendered useless if health facilities cannot provide appropriate high quality care or supplies are not available.

5. Governments should build on and improve existing transport and health networks

Governments should consider upgrading strategically located and established primary health care centers to provide EmOC services. This reduces the distance and makes it easier for women to identify services, and is more cost effective than building new clinics. Using existing transport networks has been a successful strategy in increasing access to transportation in areas where there is no public transportation.

6. Better evaluation of the effects of transport interventions and improved transportation systems on access to preventative and emergency maternal health services is required

Building up an evidence base about the impact of transport interventions on maternal health makes it easier to demonstrate the link between transport and maternal health and convince governments, donors and international organisations to invest in this sector. It also enables successful interventions to be replicated or scaled up providing that they are suitably adapted to local contexts.

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