

Influence of geographical factors on the use of antenatal care in Champhai district, Mizoram

K.C. Lalmalsawmzauva and D.K. Nayak

Abstract

The present paper explores the degree to which spatial factors are determinants of mother's health seeking behavior regarding the use of antenatal care in Champhai district, the highest mountainous district of Mizoram bordering Myanmar. Geographical variations at the micro-level suggest that research on reproductive health at lower level is imperative to address a range of women's health needs as well as improve the quality of services provided for reproductive morbidity. Field investigations evaluate household characteristics and ample reproductive health conditions as well as associated factors of mothers aged between 15-45 from three selected towns and three selected villages spreading in different places across the districts namely- Champhai towns, Khawzawl towns, Ngopa towns and villages like Tualcheng, Vapar and Samthang, which consists of aggregate value of 412 eligible couples (mothers aged between 15-45). The analysis focuses on two dichotomous outcome measures associated with antenatal care. (a) Whether a woman receives any antenatal, (b) If not, why? Are any of the geographical factors such as location of residence (rural/urban) or accessibility (transportation problems, distance from health care facilities, etc.) consequential to the reproductive health care situation?

Policies and programmes conceived without consideration for the local factors were found to have a profound impact on the health of women which in turn affect the vital connection between women's health and women's status across different spatial scales and analytical levels.

Keywords : *Reproductive health, antenatal care, distance, accessibility, rural, urban.*

Introduction

According to ICDP Programme of Action (2004), "Reproductive Health is a state of complete physical, mental and social well-being, and not merely absence of disease or infirmity, in all matter relating to the reproductive system and its functions and

processes. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so". It includes antenatal care (ANC), delivery care (DC) and postnatal care

(PNC). Antenatal care refers to pregnancy-related health care provided by a doctor or a health worker in a medical facility or at home. Ideally, antenatal care should monitor a pregnancy for signs of complications, detect and treat pre-existing and concurrent problems of pregnancy, delivery care and provide advice and counseling on preventive care, diet during pregnancy, and postnatal care and related issues.

Maternal health services have a potentially vital role to play in the improvement of reproductive health. There is little doubt that access to skilled assistance and well equipped health institutions during pregnancy and delivery can reduce maternal health complications and improve pregnancy outcomes. Present research analyses the influence of spatial factors such as accessibility, distance and place of residence to mother's health seeking behavior. Many researches found that not only socio-cultural factors influence maternal health but also spatial variations, its accessibility and location at the micro level. One of its purposes is to describe the health care received by a sample of Champhai district women in their last fertile pregnancy; and identify links between uses of services and providers during pregnancy period.

Objective

The present paper attempts to prove that spatial variations and accessibility at the micro-level influence reproductive health. To fulfill the above objective the following hypotheses are proposed:

H1 - There is urban bias in term of health care facilities and personnel, which badly affected rural mothers.

H2 - Poor road network connections and long distance leads to less number of mothers for Antenatal Care (ANC).

H3 - Antenatal care has a positive association with good road conditions.

Review of literature

Distance to the nearest health centre, lack of transportation, and perceived quality of services are all thought to be associated with the use of modern health care and seeking of assistance from trained medical personnel (Noor Ali *et al.*, 1999; Paul, 1992; Paul and Rumsey, 2002; Sundari, 1992). Paul and Rumsey (2002) note that lack of access to health care facilities refers to economic and socio-cultural distance as well as physical distance. There is likely to be found an association between frequency of maternal health care use and region of residence as evidenced in Kenya, (Magadi *et al.*, 2000). Gleib *et al.* (2003) also found large differences in the likelihood of obtaining pregnancy care across regions in Guatemala, perhaps due to regional variations socially and geographically. It is likely that access to skilled assistance and well- equipped health institutions during delivery can reduce maternal mortality and morbidity and improve pregnancy outcomes. Geographical barriers such as mountainous terrain or poor road conditions also delay access to maternal health care. Pebley *et al.* (1996) found that distance to the nearest clinic in Guatemala is significantly

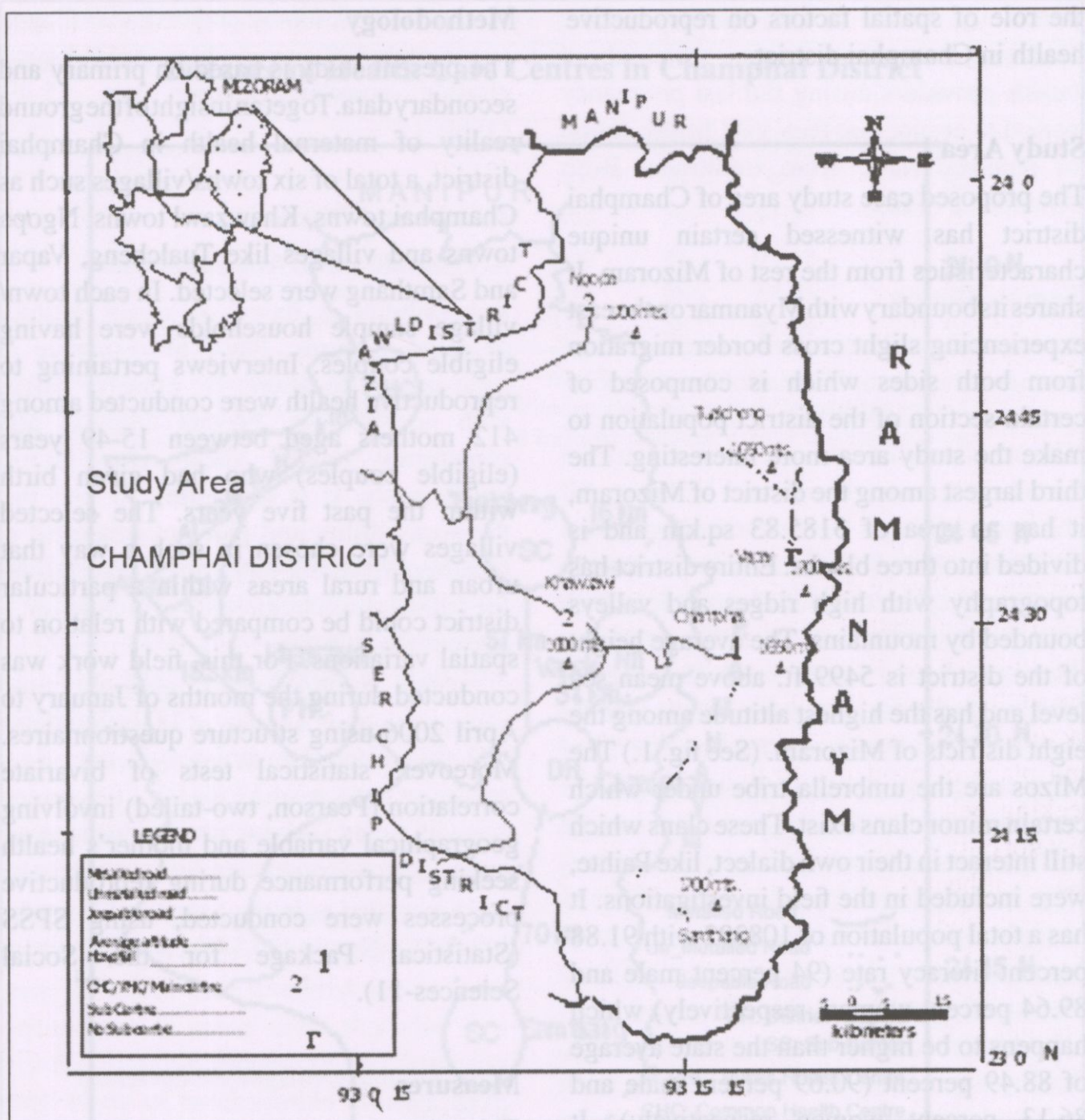


Fig. 1: Study Area in Champhai District

and negatively related to both antenatal care and delivery assistance. Scholars from Guttmacher Institute, 2007, found that in Haiti, road conditions and geographical constraints deny access to both prenatal care and delivery care for women living in rural areas. The accessibility of health services

is often cited as a critical determinant of health care choice in the developing world (Timyan et al, 1993), where an increase in distance to the health facility is associated with less use. In relation to the above conceptual literature pertaining to maternal health, an attempt has been made to explore

the role of spatial factors on reproductive health in Champhai district.

Study Area

The proposed case study area of Champhai district has witnessed certain unique characteristics from the rest of Mizoram. It shares its boundary with Myanmar on the east experiencing slight cross border migration from both sides which is composed of certain section of the district population to make the study area more interesting. The third largest among the district of Mizoram, it has an area of 3185.83 sq.km and is divided into three blocks. Entire district has topography with high ridges and valleys bounded by mountains. The average height of the district is 5499 ft. above mean sea level and has the highest altitude among the eight districts of Mizoram. (See fig. 1.) The Mizos are the umbrella tribe under which certain minor clans exist. These clans which still interact in their own dialect, like Paihte, were included in the field investigations. It has a total population of 108392 with 91.88 percent literacy rate (94 percent male and 89.64 percent women, respectively) which happens to be higher than the state average of 88.49 percent (90.69 percent male and 86.13 percent women respectively). It consists of three towns and a number of villages with an urban population of 42,049 (38.79 percent) and rural population of 66,343 (61.20 percent), respectively. So the high level of literacy rate, low level of urbanization and natural composition of population are likely to be interrelated with reproductive health.

Methodology

The present study is based on primary and secondary data. To get an insight of the ground reality of maternal health in Champhai district, a total of six towns/villages such as Champhai towns, Khawzawl towns, Ngopa towns and villages like Tualcheng, Vapar and Samthang were selected. In each town/village sample households were having eligible couples. Interviews pertaining to reproductive health were conducted among 412 mothers aged between 15-49 years (eligible couples) who had given birth within the past five years. The selected villages were chosen in such a way that urban and rural areas within a particular district could be compared with relation to spatial variations. For this, field work was conducted during the months of January to April 2006 using structure questionnaires. Moreover, statistical tests of bivariate correlation (Pearson, two-tailed) involving geographical variable and mother's health seeking performance during reproductive processes were conducted, using SPSS (Statistical Package for the Social Sciences-11).

Measures

This was an attempt to assess the causes of not attending antenatal care (ANC) during pregnancy among mother aged 15-49. Respondents were asked on a six point scales as to what was there cause of not attending antenatal check-up during pregnancy such as- Transport problem, Require for household work, require for work on agricultural land or family business, Cost too much, not interested in

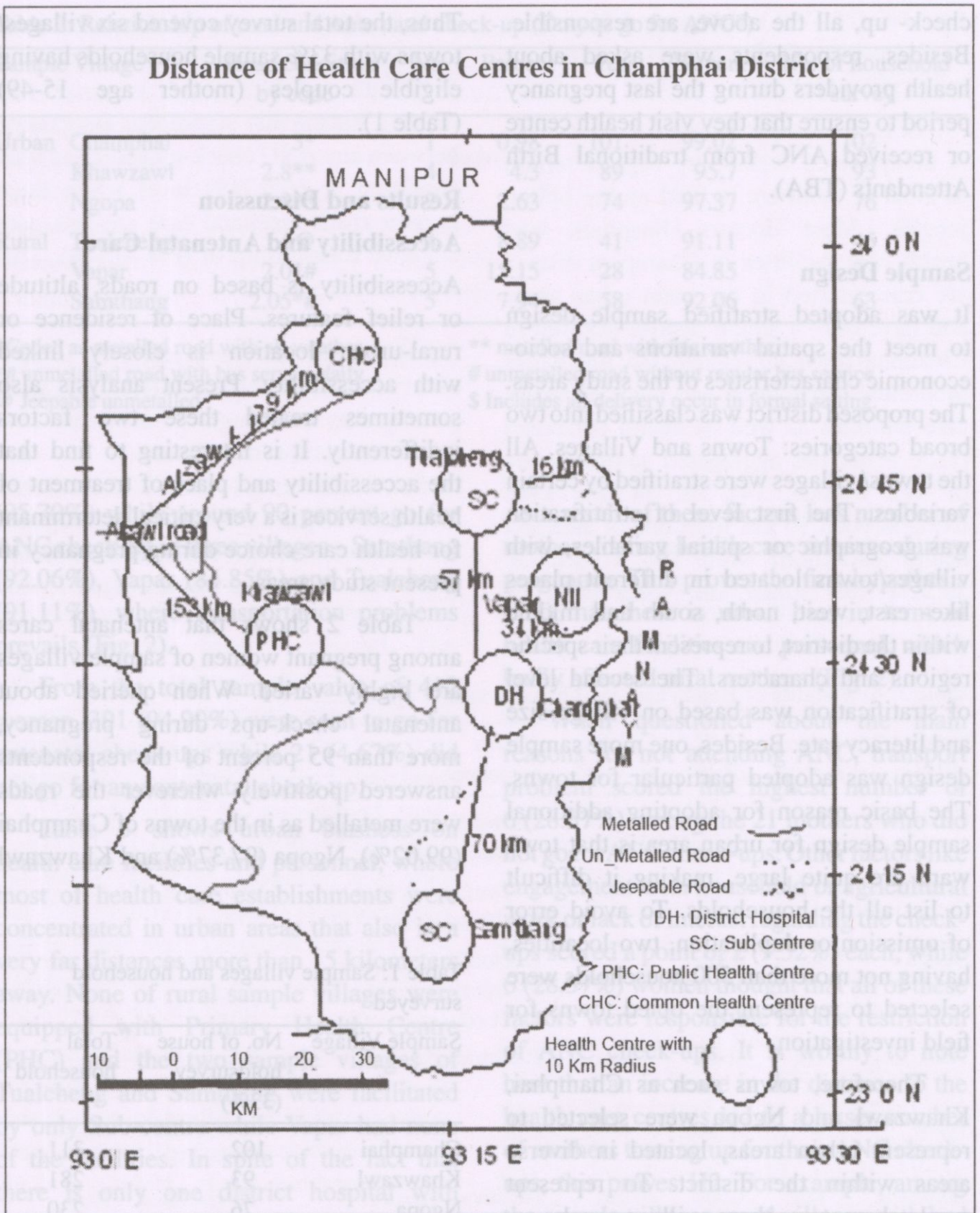


Fig. 2: Distance of Health Care Centres in Champhai District

check-up, all the above, are responsible. Besides, respondents were asked about health providers during the last pregnancy period to ensure that they visit health centre or received ANC from traditional Birth Attendants (TBA).

Sample Design

It was adopted stratified sample design to meet the spatial variations and socio-economic characteristics of the study areas. The proposed district was classified into two broad categories: Towns and Villages. All the towns/ villages were stratified by certain variables. The first level of stratification was geographic or spatial variables, with villages/towns located in different places like- east, west, north, south and middle within the district, to represent their specific regions and characters. The second level of stratification was based on village size and literacy rate. Besides, one more sample design was adopted particular for towns. The basic reason for adopting additional sample design for urban area is that town ward are quite large, making it difficult to list all the households. To avoid error of omission or duplication, two localities, having not more than 500 households were selected to represent the opted towns for field investigation.

Therefore, towns such as Champhai, Khawzawl and Ngopa were selected to represent urban areas, located in diverse areas within the district. To represent rural characters three village such as- Tualcheng (jeepable), Vapar and Samthang (both unmetalled roads) were selected. Comparison and analysis has been made on the basis of social and geographical factors.

Thus, the total survey covered six villages/ towns with 33% sample households having eligible couples (mother age 15-49) (Table 1).

Results and Discussion

Accessibility and Antenatal Care

Accessibility is based on roads, altitude or relief features. Place of residence or rural-urban location is closely linked with accessibility. Present analysis also sometimes treated these two factors indifferently. It is interesting to find that the accessibility and place of treatment of health services is a very critical determinant for health care choice during pregnancy in present study areas.

Table 2 shows that antenatal cares among pregnant women of sample villages are highly varied. When queried about antenatal check-ups during pregnancy, more than 95 percent of the respondents answered positively wherever the roads were metalled as in the towns of Champhai (99.02%), Ngopa (97.37%) and Khawzawl

Table 1: Sample villages and household surveyed

Sample Village	No. of house holdsurvey (33%)	Total household
Champhai	102	311
Khawzawl	93	281
Ngopa	76	230
Tualcheng	45	135
Samthang	63	189
Vapar	33	99
Total	412	1245

Table 2: Relationship of road and Ante natal check-up (Do you go for ANC?)

Sample Village	Road condition by code	No	Percent	Yes	Percent	No. of household survey
Urban Champhai	3*	1	0.98	101	99.02	102
Khawzawl	2.8**	4	4.3	89	95.7	93
Ngopa	2.8**	2	2.63	74	97.37	76
Rural Tualcheng	1.5@	4	8.89	41	91.11	45
Vapar	2.01#	5	15.15	28	84.85	33
Samthang	2.05*#	5	7.94	58	92.06	63

*Coded as metalled road with all weather

*# unmetalled road with bus service daily

@ Jeepable unmetalled

** metalled road with fair weather,

unmetalled road without regular bus service

\$ Includes all delivery occur in formal setting.

(95.70%) while around 90 percent go for ANC check-up in three villages – Samthang (92.06%), Vapar (84.85%) and Tualcheng (91.11%), where transportation problems prevails (Fig. 2).

From the total sample value of 412 women, 391 (94.90%) were seen to go for antenatal check-ups while 21 (4.67%) did not go for any antenatal check-up.

Table 3 shows urban biasness on health care facilities and personnel, where most of health care establishments were concentrated in urban areas that also in a very far distances more than 15 kilometers away. None of rural sample villages were equipped with Primary Health Centre (PHC) and the two sample villages of Tualcheng and Samthang were facilitated by only Sub-centre while Vapar had none of the facilities. In spite of the fact that there is only one district hospital with only one gynecologist in Champhai towns, other sample villages were located very far away from it which is also with very poor roads connection at the rugged topography.

As a result of these factors less number of mother visiting health care services during pregnancy. This proves the first hypothesis (H1) that there is urban bias in term of health care facilities and personnel, which badly affected rural mothers (Fig. 2).

When questioned about the main reasons for not attending ANC, transport problem scored the highest number of 6 (28.57%) among the 21 mothers who did not go for ANC check-ups. Other factors like engagement with household or agricultural work or lack of interest regarding the check-ups scored a point of 2 (9.52%) each, while 6 (28.57%) women thought that all of these factors were responsible for the restriction of ANC check-ups. It is worthy to note here that an increase in the distance to the health care centres led to a lesser number of mothers turning up for their ANC check-ups, this proves H2. For example, among the sample villages, rural villages with bad road connections like Tualcheng (jeepable), Samthang (unmetalled fair weather), and Vapar (unmetalled fair weather) shared the highest number of mothers who could not go

for ANC (28.57 %) while only 4.76 percent of the women had transport problems in urban areas (Table 2).

In these sample villages, accessibility is complicated further by rugged terrain as most of them are located on the hilltop jungles. Most doctors, hospitals, and health care facilities in Champhai district are concentrated in the main urban areas and have only a single district hospital in Champhai town. It is evident that urban bias prohibited distribution and place of health care facilities as well as health personnel (H1). From the aggregated sample value of 412 women, 141 i.e. 34.22% were living beyond 15 km from doctor attached health institutions while 108 women i.e. 26.21% live under the supervision of

only health workers and 33 women i.e. 8 % lived without any health personnel or any health care facilities. It is proven that there is statistically significant association between any ANC check-up and good road condition at ($r=0.768$) level while there is poor roads antenatal care are less with negative relationship of ($r = -0.768$). This statement proves H3.

(a) *Antenatal care providers*: It is also observed that inadequate referral linkages, poor quality care, high-out-of-pocket cost for consultation and transport are also factors contributing to poor utilization and seeking of health care providers throughout the maternal health process. The most recent live births among the women (aged 15-45)

Table 3: Availability of Health care facilities in a spatial dimension

Name of villages	Sub-Centre	CHC /PHC	District Hospital	Health personnel	Link Road	Highest Institution
Champhai	0 km	0 km	0 km	Doctor (11), nurse (21) Gynaecologist (1)	Metalled /Bus	College
Khawzawl	0 km	0 km	152 km#	Doctor(1), nurse (5), Health supervisor (1)	Metalled /Bus	College
Ngopa	0 km	0 km	179 km#	Doctor(2), nurse (6) Health supervisor (1), RCH education officer (1)	Metalled /Bus FW	Higher Secondary
Tualcheng	0 km	16km	57 km	Health worker(2)	Unmetalled/ Jeepable	High School
Vapar	Nil	34 km	34 km	Nil	Unmetalled /F.W Bus	Middle School
Samthang	0 km	12km	70 km	Health worker(2)	Unmetalled /F.W Bus	High School

FW = Fair Weather Road

CHC = Community Health Centre

PHC = Primary Health Centre

To Aizawl, since people generally prefer to get treatment from Aizawl.

Table 4: Response of women to the question: "Whom did you see for ANC?"

	Champhai	Khawzawl	Ngopa	Tualcheng	Vapar	Samthang
Govt. Doctor/Nurse	94	77	64	6	12	16
ANM/LVH/ Health Supervisor	0	4	3	1	0	1
Health worker	2	6	6	21	2	29
Private doctor	4	1		1	5	2
Traditional healer	1	1	1	12	9	10
Total in number	101	89	74	41	28	58

who gave birth in the five years preceding primary survey (January-April, 2006) are shown in table 6. If a woman received care from more than one type of health provider, only the provider with the highest qualification has been considered. The Table 5 clearly indicates that consultation of health care personnel especially of doctors during pregnancy is the lowest in the most poorly-linked village of Tualcheng (14.63%) followed by unmetalled road-connected villages of Samthang (27.58%) and Vapar (42.86%). However, it is seen that consultation of doctors is exceedingly high in better road connected sample towns such as Champhai (93 %), Ngopa (86.49%) and Khawzawl (86.52%).

The influence of accessibility manifest its role by showing high number of consultation of traditional birth attendants (Dai) in poor road connected rural areas (26.21%) while urban mothers tended to go to doctors or nurses during their pregnancy period and only 1.15 percent received ANC from TBA/ Dai. Distance to the nearest health centre was found to

have a great impact on mother's health seeking behaviour. They generally went to the nearest health centre for check-ups during pregnancy. In case of Vapar village where there is no health care facility, women usually hired traditional birth attendants (32%) while a comparatively high consultation to private doctors, which are available at 34 km away at Champhai town (17.86%). It is also noticed that Auxiliary Nurse Midwife/ Lady Visitor of Health (ANM/LVH) and health supervisors are hardly consulted in all sample villages despite the sharp difference between rural and urban women on health seeking pattern. One peculiar features among urban areas is that even though Champhai district hospitals are closer (42 km) to Khawzawl than those present in Aizawl (152 km) respondents generally preferred to go to Aizawl for check-ups and treatments. This may be due to insufficient health care facilities at the former hospital as compared to the latter combined with easy transportation to Aizawl hospitals being another important reason.

Table 5: Reasons for Not getting ANC

Reasons not for ANC	Champhai	Khawzawl	Ngopa	Tualcheng	Vapar	Samthang
Transport problem	0	1	0	2	2	2
Require for household work	0	1	0	0	0	1
Require for work on agricultural land or family business	0	0	1	0	0	1
Cost too much	0	0	0	1	1	0
Not interested in check-up	1	1	1	0	0	0
Almost all are responsible	0	0	0	2	2	2
Total	1	3	2	5	5	5

Conclusion

The micro level or individual level examination on reproductive health care practices during pregnancy reveals that antenatal care is very common both in rural and urban areas which touched over 90 percent due to overwhelmingly high literacy rate in the districts. It is also found that local or villages level differences in aggregate measures of antenatal care practices. Research exhibits that spatial variations or place of residence matters for the use of antenatal care in Champhai district. It is interesting to display here that all the three hypothesis were proved positively, which indicates that accessibility and road network conditions played critical role on mother's health seeking behaviour as well as distance substantially influence use of maternity services in the study area. Therefore, it might be suggested that policies and programmes regarding reproductive health should be conceived at the micro-level with improving road infrastructure besides maternity facilities. It is also

advisable to apply bottom-up approach, which would have a profound impact on the health of women which in turn affect the vital connection between women's health and women's status across different spatial scales and analytical levels.

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KC. Lalmalsawmzauva
Research Scholar,
Department of Geography

D.K Nayak
Professor,
Department of Geography
North Eastern Hill University,
Shillong-22