MATERNAL MORTALITY RATIO AND MAL-NUTRITION AMONG WOMEN IN RURAL COMMUNITIES OF HYDERABAD DIVISION; A SOCIOLOGICAL ANALYSIS

Sayed Sada Hussain Shah[*]
Dr. Aijaz Ali Wassan[†]
Sadaf Saeed[‡]
Lubna Sohail[§]

ABSTRACT

Maternal mortality ratio (MMR) was one of priority goal among millennium development goals of United Nations till 2015. Which is again considered as a priority goal among sustainable development goals set by United Nations which are supposed to be achieved until 2030. As per these goals MMR should be minimized at the level of 71deaths among 100,000 live births during a specific time period. However, Sindh government couldn't achieve the target of 2015, instead of running Mother New born and Child Health (MNCH) program at grass-roots level. Though government has appointing number of lady health visitors and workers but still there is need of more to cover all population of rural areas. It was found during study that available maternal health workers in rural areas are not enough in number and quality to reduce maternal mortality ratio. Majority of women are declared with nutritional deficiencies by local maternal health workers. Ratio of maternal mortalities due to malnutrition is always higher as also reported in other research studies. This study aims to find out the sociological barriers to reduce maternal mortality ratio in rural areas, such as, issue of malnutrition among women. Study has taken into account key socio-cultural factor/ variable effecting on maternal mortality. For that purpose, mixed methods of data collection were used, for quantitative data 385 in depth interviews were conducted with mothers and 45 key informant interviews were conducted with maternal health workers, in different rural areas of Hyderabad division. For qualitative data structured observations were conducted with three women from three different topographic areas of Sindh (Coastal belt, dry hilly area, barrage area).

Keywords: *Maternal Mortality, Malnutrition, Rural Women.*

[*] Ph.D. Scholar Department of Sociology, University of Sindh Jamshoro
[†] Professor Department of Sociology, University of Sindh Jamshoro
[‡] Lecturer Institute of Gender Studies, University of Sindh Jamshoro
[§] Assistant Professor, Department of Psychology, University of Sindh Jamshoro

INTRODUCTION

The proposed study is focused on maternal mortality ratio in rural areas of Sindh and how much it is related with community knowledge, attitude and practice regarding food and nutrition of women. Maternal mortality ratio is very priority problem included in sustainable development goals till 2030. Instead of launching mega projects by government and non-government organizations maternal mortality ratio is not reduced at satisfactory level.

Sindh is the second largest province of Pakistan in terms of population. More than half of its population lives in the rural areas. Whereas, on ladder of social hierarchy women are at marginalized level. Therefore, mothers of marginalized communities were focused from rural areas of Hyderabad division, Sindh. In rural communities of Pakistan gender and sex awareness is denoted taboo. This study is specifically designed to see how the malnutrition is effecting on maternal mortality ratio and what could be the possible solutions to handle it in context of rural areas of Sindh.

Objective of Study

o   To know if the malnutrition is causing maternal mortality,

Research question

o   Does malnutrition among women increase maternal mortality ratio?

Variables

Table-1 Variables	
Variables	**Type of variable as per study**
Malnutrition women	Independent variable
Maternal mortality ratio	Dependent variable

Hypothesis

o   Malnutrition among women is likely to be affecting on maternal mortality ratio,

THEORETICAL FRAMEWORK

A Theory for Midwifery Practice

Theory of Birth Territory discuss about the relation between environment of the individual birth room, control and/or authority, and how women experience delivery physiologically as well as emotionally. Theory says that if the delivery takes place in an ideal or well-maintained delivery room or place it effects positively on health of women and baby. The important thing in this theory is, it realizes the importance of mental and emotional care rather than focusing on physical medical treatments only (Fahy et al., 2006).

Social, Biomedical and Feminist Models of women health

Feminist model encourages to use WHO model of health that says "health is complete mental, physical and social wellbeing not only absence of diseases and/or immunity". It has philosophical links with midwifery practice and nursing theory, in a sense both of the theories do realize the importance of emotional and psychological care (Ruzek et al., 1997).

Social Determinants Theory

Social conditions can have positive or negative impact on children. Social conditions during pregnancy can influence the growth of babies and ultimately may result in low of high birth weight. This theory defines the importance of social setup on the biology of human being. This theory explains that diseases are the part of human biology, a better society can lead to develop better human biology and can decrease the ratio of diseases (Halfon et al., 2010).

LITERATURE REVIEW

MNCH indicator survey says that, nearly 82% of women received only one antenatal care check-up during nine months' pregnancy. Study explore further about who has provided the services, it was found that 70% of antenatal check-ups are provided by private health services (Mother and Child Health Program Indictor Survey Sindh Province, 2013).

A Study of hospital record, reported 168 maternal deaths out of 30563 deliveries in a hospital, this indicates about the complex nature of maternal health treatment. Study found the youngest age delivery in the age of 17 years. Study found high mortality rate among women those delivered babies in age of 20 to 30 years. In rural areas pre and post-natal is very week at the

level of family (Riaz et al., 2014).

In the recent National Nutrition Survey of 2011, it is found that there is problem of food insecurity in Sindh. Nearly 28% households/ families are secure with food, whereas, 72% households/ families are facing food insecurity. Study went to explore further and it is found that out of 72% food insecure households/ families, 21.1% are food insecure but they do not face any starvation. Whereas, nearly 16.8% households/ families are food insecure and they also face starvation (National Nutrition Survey, 2011).

During one year of study total 3011 maternity patients were admitted in hospital. Total 2786 live births were reported as per hospital record. Study found 43 maternal deaths out of 2786 live births, study explored that majority of cases of maternal deaths (88.3%) were not registered. Study found that most of the women died during or just after delivery were between the ages of 25 to 35 years. Majority of women (90.6%) died were facing iron deficiency / anaemia. Most common risk factors found were hypertension, haemorrhage and sepsis. The study shows the important role of diet and age in maternal mortality (Hassan et al., 2007).

As per an estimation in Pakistan nearly 21% population is under poverty line, though poverty has many aspects such as food insecurity and under nutrition. The problem of maternal health has many factors interlinked such as, poverty, growing population and poor diet. Provincial government needs to improve mother and child services at grass root level, such as at district level. Mostly the aims of maternal health and nutrition programs are inter linked and these also can be achieved through health department. Government departments in general lacks a system to collect on time and quality data. Government needs to develop data systems based on modern information and technology tools (Bhutta and Hafeez, 2015).

Recent multi-indicator survey in Sindh measured 33.2% births out of these 30% are estimated having weight less than 2500 grams. It is found that fertility rate in rural areas of Sindh is 5.2 per women during fertility age from 15 to 49 years. Study found that overall birth rate in urban and rural areas is 4.0 per woman. Study indicates that ratio of early child bearing is reduced in past 10 years, especially in urban areas. As per survey results nearly 20.7% married women between the ages of 45 to 49 years gave first birth before 18 years. Whereas, early child bearing ratio among women age of 20 to 24 years is reduced at level of 10 percent. Ratio of receiving antenatal care is still not satisfactory nearly 41.1% women in overall urban and rural areas received

prenatal care for four times during pregnancy (Multi-Indicator Cluster Survey, 2014).

RESEARCH METHODOLOGY

In view of the purpose of the study mix methods are used. Mix methods (qualitative/quantitative) helps researcher in data triangulation or in observation of a social phenomenon/ problem from different aspects (Denscombe, 2008).

For qualitative data structured observations were conducted with three women in different topographies of Sindh. Such as, one from coastal area, one from hilly arid area (Kacho) and other from barrage area. For quantitative data face to face interviews were conducted with 385 women in nine districts of Hyderabad division using semi-structured interview guide.

Two types of researches are used in study, ethnographic study which will find out and explain how factors such as, community sensitization and infrastructure accessibility affect to maternal mortality ratio in rural communities of Sindh. Ethnography is drive from Greek word "ethnos" means folk, people, nation and "grapho" means I write (Brewer and John, 2000).

This type of study is being conducted first time in area that aims to explore the reasons of maternal mortality ratio at the level of community/ household. Under exploratory study quantitative data area collected followed by qualitative data, quantitative data are preferred and interpreted to explore the social problem (Creswell, 2013).

The study was focused on rural areas of all nine districts of Hyderabad division, Sindh. Specific sample criteria were mothers from poor communities having experience of at least one pregnancy and delivery and maternal health workers in rural areas.

Though the targeted respondents of study were pre-defined such as, mothers from rural communities of Hyderabad division. Therefore, non-probability purposive sampling is applied as a sampling technique (Palys, 2008).

Sample Size

Sample size is calculated online using Rao soft Sample Size Calculator (http://www.raosoft.com/samplesize.html).

Formula for calculation of sample size;

Margin of error	5%
Level of confidence	95%
Population size of area	6,829,537
Response distribution	50%
Size of sample	**385**

Tools & methods of data collection

Three types of data collections tools were used in study, in-depth interviews, key informant interviews and observation schedule. Interview Schedule Method was applied to conduct in-depth and Key Informant Interviews (Devi, 2002).

Participant Observation, is one type of data collection method typically done in the qualitative research paradigm. Its aim is to gain a close and intimate familiarity with a given group of individuals/ communities (Bell, 2010).

Validity

Validity denotes to measure what has been subjected to measure. During the course of present study tools were asked exactly to the point. Pre-testing of the tool was done on the 10%(38) of the sample. It was formulated with keen observation and immense care.

Reliability

When one sample is repeatedly asked for the same subject through same methodology and sample responses same answers that is called reliability. The conditions of the universe are the same for the last several years. There has no visible sign to note social change in the region.

Data Analysis

Quantitative data were analyzed using Statistical Package for Social Sciences (SPSS) and qualitative data were analyzed using NVIVO software. Since hypotheses were developed in study, therefore, null hypotheses were formulated that stated that no any relation exist between two variables. The preferred level of significance was 0.05. A significant difference got on every dependent variable with maternal mortality ratio. Chi-square test was also used to observe between the variables.

RESULTS

Results of qualitative data

Participant observation with mothers

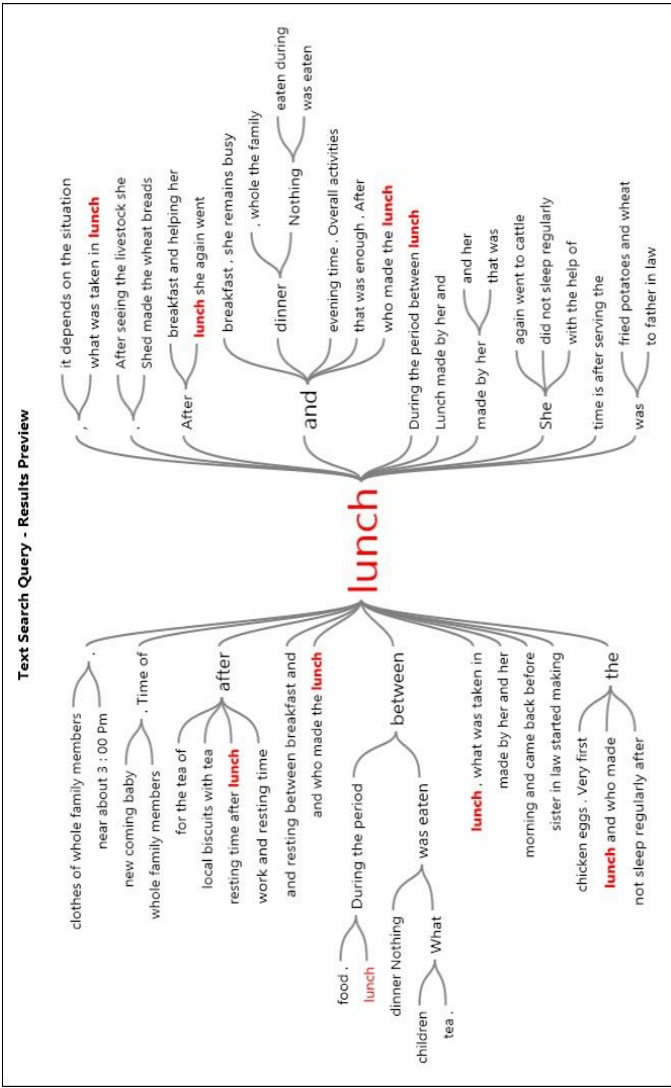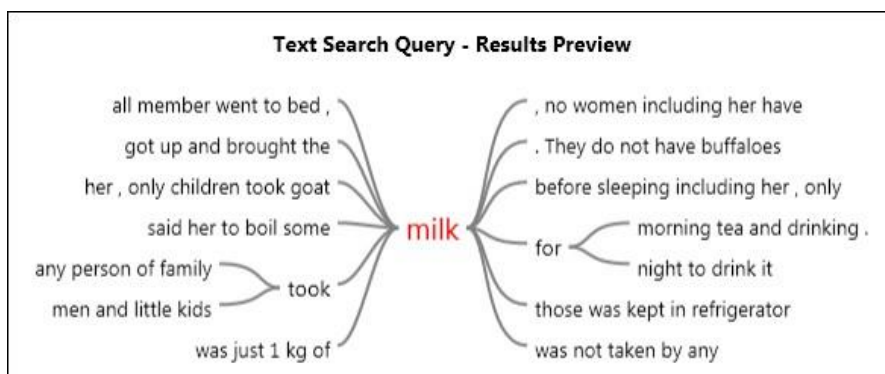**Figure-1:** *Daily Work and Rest*

Figure-2: Use of milk

Above figures (1 and 2) are mind maps of three structured observations conducted in three different topographic areas of Sindh. Such as, one with women from coastal belt, one with women from hilly area (Kacho) and one with women from barrage area. In agricultural areas women do perform physical works as well but their diet and economic status is better. Women in coastal area usually do not have cattle and fields for work but they keep poultry. Though they have work burden but they have fish to eat in regular diet. Women of hilly arid zones (areas those depend on rain) are more vulnerable they have to do lot of work against very poor intake. Apart of that in arid hilly areas women are not treated with grace by husband and in laws as compare to agriculture and coastal belt. In aspect of emotional care people coastal belt were found more supportive as compare to other topographies studied.

Observation-1 (Agricultural Area)

She wakes up early in morning by 6:00 am, she was sleeping in open courtyard with her first son who is nearly 4 years old and she was seven months pregnant. She started preparing tea and wheat bread and her son was helping her to set fire. After preparing breakfast she went to see the cattle in courtyard. After she watered the buffaloes her mother in law milked them. After a while she went into field with her husband to support to carry grass for cattle. She came back early from field today; field is very near to her house. She started working on small quilt for her new coming baby, she is five months pregnant. She with the help of her sister in law prepared lunch, she made the wheat breads and her sister in law fried the potatoes and chicken

eggs. After lunch she again went to cattle to see if everything was alright because these are just return from field. She hasn't had any ultra sound; she is just relying on the advices of LHWs those visited her house thrice during her pregnancy. She had a chit in which LHW have advised her to take iron and calcium tablets but she could not have managed to buy these. Nothing was eaten between lunch and dinner, whole the family took few local biscuits with tea after lunch. She and her sister in law made the dinner it was green vegetables (spinach) and rice bread. After taking dinner she went into bed with her son, they are sleeping in open yard. Only two men and little child takes the milk in night no women including her have this opportunity. She said that LHW has told her that her Measurement of Upper Arm Circumference (MUAC) is low as per required, she is malnourished.

Observation-2 (Costal Belt)

She wakes up early in the morning, prepared morning tea for her whole joint family, after serving the tea to young family members in the kitchen then she serves the cup of tea to her old age father in law on his bed. She is six months pregnant. Usual breakfast of family is only tea, sometimes sweet and salty biscuits (Chakram) these biscuits are generally prepared on the local bakeries, and sometimes they take food saved last night. After the breakfast, she swept the floor, and then moved to clean chicken shade, after that came back in the kitchen for the preparation of food. During the period between lunch and breakfast, she remains busy in the household work like, cleansing of house, chicken shade, and washing clothes of whole family members. Lunch was prepared by her and served to whole family and at the she took her lunch between 3:00 pm to 3:30 pm. This is the usual time of lunch though she is not happy with such timing. After pregnancy she is feeling hungry more frequently but she has to follow the norms of family otherwise she will be ignored blaming that she did not obey respectful elders. Lunch was wheat bread and spinach. She did not sleep regularly after the lunch; it depends on the situation sometime she sleeps while not feeling well. Otherwise during the free time, she makes quilts. She takes folic acid tablets (iron tablets), which are provided by lady health worker during the visit of village, she is diagnosed malnourished. Whole the family took rice with fried fish and lentil in dinner, no any person of family took milk before sleeping including her. Most of the times these rice and lentil made in night are used in breakfast especially by children.

Results of simple tables (quantitative data)

Malnutrition among mothers and maternal mortality ratio

Table-4: *Q4-B Deficiencies Identified in Respondents*

		Responses		Percent of Cases
		N	Percent	
Deficiencies	Anaemia	214	37.6%	59.4%
	Sugar low	124	21.8%	34.4%
	General weakness	231	40.6%	64.2%
Total		569	100.0%	158.1%

a. Dichotomy group tabulated at value 1.

Table-4 shows different types of nutritional deficiencies identified among women due to poor diet. Though there could be more than above displayed but these are key impacts of poor diet those are effecting on maternal health. The question asked with choosing multiple choices, response of general weakness was checked very frequently (64.2%), after that there is anaemia (59.4%) and sugar low among found 34.4%. anaemia is lack of haemoglobin that is caused by iron deficiency.

Table-5: *Q4-C Is poor diet/ nutritional deficiency threat to life of a pregnant woman*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	192	49.9	49.9	49.9
	Yes	193	50.1	50.1	100.0
	Total	385	100.0	100.0	

Table-5 displays the numbers and percentages of women those discussed regarding importance of nutritional diet for a pregnant woman. It was found that majority of women (50.1%) said that poor diet or nutritional deficiency is a life threat for pregnant women. Whereas, 49.9% women said that they don't have any such information or observation that poor diet can be life threat for pregnant women. It can be concluding that majority women do realize the importance of diet and nutrition for pregnant women. Despite of

that they are not able to avail proper nutritious diet. Instead of that realization table-15 has found that 90.9% women are identified with any type of nutritional deficiency.

Table-6: *Q4-D Any woman died during delivery due to poor diet/ deficiency in village*

		Frequency	Percent	Valid Percent	Cumulative Percent
	No	222	57.7	57.7	57.7
Valid	Yes	163	42.3	42.3	100.0
	Total	385	100.0	100.0	

Table-6 shows the reasons of maternal mortalities in rural areas as told by women. It was found that majority of women (57.7%) said that no any maternal death happened in their villages due to poor diet of women. Whereas, 42.3% women said that maternal mortalities happened in their villages due to poor diet of or nutritional deficiencies among women. It can be concluding that proper nutritious diet of women can reduce maternal mortality ratio up to 42.3% that is very high as compare other variables of study.

Results of Statistically Tested Hypothesis

Malnutrition among women and maternal mortality ratio

Hypothesis: 1

o H_a: Malnutrition among women is likely to be effecting maternal mortality ratio.

o H_o: There is no relationship between malnutrition among women and maternal mortality ratio.

Table-7: *Is poor threat to life of a pregnant woman * Any woman died due to poor diet, Cross tabulation*

			Any woman died due to poor diet		Total
			No	Yes	
Is poor diet threat to life of a pregnant woman	No	Count	125	67	192
		Expected	110.7	81.3	192.0
	Yes	Count	97	96	193
		Expected	111.3	81.7	193.0
Total		Count	222	163	385
		Expected	222.0	163.0	385.0

Table-7 is a contingency table that explains the figures of two questions against each other. If we see there are two questions in table and response of bother are dichotomous. One question asks about if the poor diet is threat to the life of a pregnant woman. And there are two responses in row there are number of women checked "No" and in row two, number of women checked "Yes". Against responses of that question the responses of other question are given in columns. That questions explores that if any woman died due to poor diet or nutrition deficiency. If we see the expected count and actual count of women those said "Yes" the woman died due to poor diet. It can be seen that expected count of women deaths due to due to poor diet is low as compare to actual count. Therefore, it can be concluding that there is relationship between poor diet of and maternal mortality ratio. Thus, the null hypothesis is rejected and research hypothesis is accepted. Further the following table will show results of "P" value and Chi-square tests.

Table-8: *Chi-Square Tests*

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8.689[a]	1	.003		
Continuity Correction[b]	8.091	1	.004		
Likelihood Ratio	8.725	1	.003		
Fisher's Exact Test				.004	.002
N of Valid Cases	385				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 81.29.

As the significance value 0.05 is higher than P value .003, therefore null hypothesis cannot be accepted by researcher, as a result it is concluded that

there exists relationship between malnutrition among women and maternal mortality ratio. In other words, the computed value 8.689 is larger than the tabulated value (3.841) therefore, null hypothesis is rejected.

Tests of Independence is a chi-square technique used to determine whether two variables are related or independent. In the present research chi-square test of independence is applied on the data of contingency Table No. 8 to determine the independence of the two variables "Malnutrition among women and maternal mortality ratio".

8.689 is the calculated value of chi-square drawn from Table no. 8 including 1 degrees of freedom. That indicates H_a: is accepted and H_o: is rejected. The p-value is .003, therefore, it can be concluding that there is strong degree of association between two variables "Malnutrition among women and maternal mortality ratio". Keeping in view the aforementioned data, it can be concluded that H_a: Malnutrition among women as a variable has a significant role in increasing maternal mortality ratio in rural areas of Sindh is accepted as supported by data. Thus, it is clear that there exists a strong interdependence or a significance association between variables concerned.

Discussion

It is important to write to the point and specific and discussing only about the key findings. Mostly the aim of writing discussion is answering the questions given in chapter of introduction of study (Annesley, 2010).

Discussion links reader with the other theories and research studies given under the chapter of introduction and/or literature review. Discussion also highlight if there any new dimension is found during study those are not relevant with the previous theories and researches (Hess, 2004).

Though, the participant observation was structured and was planned to get knowledge around the nutrition + work + rest of pregnant or lactating mothers. Therefore, it can be discussed under the theme of malnutrition but it is narrated separately in the beginning to set the mind before going to discuss on aspect of malnutrition and maternal mortalities. The findings of participant observations are narrated like a diet and work story of a day from morning till night.

Majority women were not able to avail required food during pregnancy and lactation. Despite of pregnancy and poor diet women were working in field and at home. There was no balance in diet verses work, peace of mind and

resting hours are just dream discussions for rural women. No any women drinks milk a few take breakfast with bread and tea, consumption of fish, meat and green vegetables was also very low. Due to the poor diet many women die during delivery due to lack of blood. In fact, in rural areas advanced maternity homes with arrangement of blood are not available. As per the context of rural areas women needs to be stronger and health to face all the hurdles but fact is totally reverse.

CONCLUSION

Writing a conclusion is building logical relation between, introduction, hypotheses, study findings and discussion. Researcher needs to avoid any temptation that may cause biased conclusions (Hess, 2004).

It is found that women of rural areas do not take proper nutritious diet. Women in rural areas also work in fields that require extra energy but diet intake against energy requirements is very low. Therefore, it can be concluded that malnutrition is highly responsible variable of maternal mortality. Majority of women are facing nutritional deficiencies as identified by health workers. As it is found during interview that 59.4% of mothers were identified anaemic (iron deficient) by government lady health workers. As per women lady health workers check their MAUC during each antenatal visit to diagnose mal-nutrition. Overall nutritious life of rural women in Sindh such as, diet intake plus work load verses needs is contributing in maternal mortality. Theoretically findings of study contribute to social determinant theory of health and wellbeing.

RECOMMENDATIONS

o   There is need to enhance community awareness regarding nutritional needs of women especially pregnant and lactating,

o   Study has found the need of research on nutritional needs of pregnant and lactating women (PLW) in rural areas of Pakistan and nutritional status of locally available foods,

o   There is need to develop a diet chart of locally available nutritious foods for pregnant and lactating women.

REFERENCES

Denscombe, M. (2008). Communities of practice: A research paradigm for the mixed methods approach. *Journal of Mixed Methods Research*, Vol 2, Issue 3, 270-283.

Fauzia A., S. Qadir, I. Batool and S. Rashid. (2015). Frequency of Maternal Deaths due to direct obstetrical causes at a teach hospital. *Gomal Journal of Medical Sciences*, Vol 13, No 2.

John Creswell, W. (2014). *Research design; qualitative, quantitative and mixed methods approaches.* Thousand Oaks, California: Sage Publication.

Jolley, Jeremy, Shields and Linda. (2009). The evolution of family-centered care. *Journal of Pediatric Nursing,* Vol 24, (2) 164-170.

Judith Bell. (2010). *Doing Your Research Project: A guide for first-time researchers in education, health and social science*. New York City, New York: Open University Press.

Laxmi, D. (2002). *Encyclopedia of Social research. (volume-1)* New Delhi, India: Anmol Publisher.

Mother and Child Health (MNCH) Program Indictor Survey Sindh Province. (2013).

Multi Indicator Cluster Survey. (2014). Karachi, Sindh, Pakistan.

Nisar, N. and Sohoo, NA. (2010a). Maternal Mortality in Rural Community: A challenge for achieving millennium development goal. *Journal of Pakistan Medical Association JPMA*, Vol 60 (1): 20-4.

Nisar, N. and Sohoo, NA.(2010b). Maternal mortality in rural community, a challenge for achieving millennium development goal. *Journal of Pakistan Medical Association JMPA*, Vol 6, No 20.

Palys, T. (2008). *Purposive sampling*. The Sage Encyclopedia of Qualitative Research

Population Council, Pakistan (2015) Reducing Maternal and Child Mortality in Sindh.

Sohail, A. (2014). A profile of women at the highest risk of maternal death in Pakistan. *Health Policy and Planning*, Vol 30, No 7.

Thomas Annesley, M. (2010). The Discussion Section: Your Closing Argument. *Clinical Chemistry*, Vol 56, No 11.

Zulfiqar, B. and Assad, H. (2015). What can Pakistan do to address maternal and child health over the next decade? *Bio Medic Center*, Vol 13, No 49.