

The table which mention above shows that the 14 indicators , the first indicator is supervision and place of delivery which came to 10.182% from the total variation, it appears this indicator contain (delivery under supervision of doctor and delivery under supervision of midwives , delivery at hospital ,and delivery at home with saturated respectively (-.909 , .903 , .-.868,; .847).

The second indicator is socioeconomic characteristics of mother and father which came to 6.17 % ,this indicator contain the following variables level of education of mother , occupation of mother , level of education of father , age of mother at the first childbearing , residence ,the duration of living in Khartoum state, age of the mother and the number of childbearing with saturated respectively (.717, .53 , .6 , .667, and-.412).

Indicator 3 demographic characteristics and age of mother and it came to 5.711 % , the indicator refers the residence ,the duration of living in Khartoum state, age of the mother and the number of childbearing with saturated respectively (-.412 , .715 , .757 ,and .515).

Indicator 4 is mothers health and child feeding and which came to 5.313% and it refers to the time of feeding children, immunization of mother against tetanus and dose tetanus immunization with saturated respectively (-.493 , -.661 , and .781)

Indicator 5 health of pregnancy and under 5 children and which came to 4.706% and it refers to medical checkup, number of medical checkup immunization of children less than 5 years with saturated respectively (.603, -.737, and .495).

Indicator 6 reaction of mother on sickness of under 5 children which came to 4.28% and it contains mother uses native treatment ,goes to the pharmacy , and to doctor when her child is sick with saturated respectively (.479 , .747 , and- .735).

Indicator 7 pregnancy complication in which outcome came to 4.113% and it contains pregnancy age less than 32 weeks and the weight of the baby at birth less than 2 kg with saturated respectively (.791 ,and .819).

Indicator 8 mother exposes alcohol habits which came to 4.07% and it contains mother expose alcohol, cigarette, and tobacco with saturated (.798).

Indicator 9 mother expose cigarette, and tobacco (Snuff) which explained 3.79 % with saturated respectively (.805 , : 774)

Indicator 10 is delivery at primary health which reached to 3.409% and it contain delivery at the primary health centers with saturated (-.863).

Indicator 11 came to 3.256% and it refers to the occupation of father, delivery under supervision of others, mother suffer from blood pressure with saturated respectively (.33, .67:.581)

Indicator 12 exclusive breastfeeding and delivery in other place which came to 3.208% and it contains delivery at other (farms) and average of breastfeeding with saturated respectively (-.737, and .336).

Indicator 13 expose 3.167% and it refers that the mother goes to the neighboring to bring their child medicine when her child is sick with saturated (.630)

Indicator 14 suffering of mother from certain diseases which explained 3.039% and it refers that the mother suffers from diabetes and others diseases with saturated respectively (.661, and .637).

Chapter Five

Main Finding of the Study, Recommendations and the suggestions

5.1: Main Findings

The cumulative percentage of under-five mortality in Khartoum State is estimated from primary data collected for a stratified multistage sample of households in Khartoum state. Causes of such under-five mortality were also investigated by applying logistic regression technique to the same data. Moreover, indicators of under-five mortality were also generated via factor analysis.

The following is a summary of main finding

1. The percentage of under-five mortality in Khartoum State was (20.6%)
2. The study found there is no difference of under-five mortality between rural and urban areas of Khartoum State. This point to the equitable provision of related health care services for the two domains in the state.
3. Duration of living in Khartoum state has association with under-five.
4. Level of education and occupation of farther have association with under-five mortality.
5. This study shows the effect of the maternal factor such as age, age at the first childbearing, number of childbearing , education level , occupation ,and suffering blood pressure , diabetes and other disease on the under-five mortality .
6. Sufficient care is best defined as the amount needed to produce both a healthy baby and a healthy mother. When mothers receive inadequate maternity care, their children will face high risks of disease and death of

the mothers and their newborns, this study shows that the medical checkup and the number of medical checkup through highest than 6 there were important for both mothers and their newborns.

7. The study of delivery under trained and qualified midwives and supervision are important for all women and should have been attended during childbirth by a qualified medical practitioner or by a state registered and supervised midwives, increasingly one with formal training to save their lives and the life of newborn , also the study shows significance determinant of delivery under supervision of midwives
8. The place of delivery is important factors of under-five mortality and the research shows the significance effect of the delivery at hospital and home on the under-five mortality. Studies on factors affecting neonatal mortality have rarely considered the impact of place of delivery. Some studies provided epidemiological information regarding the impact of place of delivery.
9. The study reveals that the average of breastfeeding is important association with under-five mortality which increasing the average of breastfeeding that will decrease the under-five mortality.
10. WHO and UNICEF recommend exclusive breastfeeding for the first six months of life, the optimal breastfeeding is so critical that it could save the lives of under-five mortality. The study confirmed that fact. The study found the death of under-five mortality under duration of feeding is less than 6 months greater than the duration of feeding after complete the 6 of lives month.
11. The reaction of mother and father when their children is sick is very important to provide them with appropriate care, the negligence of not taking the child to health "unit care will aggravate the disease may leads

to death. The result will leads to decrease of under-five mortality when the mother who visit the doctor and used native treatment.

12.The immunization of under-five child and mother have association with under-five mortality .the immunization a key component of child survival strategies, routine immunization is considered as a biggest challenge in the developing countries. Pregnant women are at particularly high risk for morbidity and mortality related to several vaccine-preventable diseases.

13.The study used the logistic regression to build model from the main determinants of under-five mortality and the study found that main determinants or risk factors are (Age of mother , Age at the first childbearing, Numbers of medical checkup, Pregnancy age less than 32 weeks, Average of breastfeeding, and mother suffers from diabetes)

14. Study" variables can be divided into 14 indicators which have been explained (64.414%) of variation of the outcome that according to eigenvalues greater than one and they were 1.

- The first indicator in supervision and place of delivery came to 10.182%.
- The second indicator is socioeconomic characteristics of mother and father and demographic characteristics, came to 6.17%.
- Indicator 3 demographic characteristics and age of mother came to 5.711%
- Indicator 4 is mother's health and child feeding, and it came to 5.313%.
- Indicator 5 is health of pregnancy and under 5 children , and it came to 4.706%

- Indicator 6 is reaction of mother on sickness of under 5 children, and it came to 4.28%
- Indicator 7 is critical pregnancy outcome, and it came to 4.113%
- Indicator 8 is mother exposes alcohol habits, and it came to 4.07%.
- Indicator 9 is mother exposes cigarette, and of tobacco (Snuff) and it came to 3.79 %.
- Indicator 10 is showed 4.07% and it refers that the mother expose alcohol.
- Indicator 11 reached to 3.256% and it refers the occupation of father, delivery under supervision of others, mother suffers from blood pressure .
- Indicator 12 is exclusive breastfeeding and delivery in other place which came to 3.208%.
- Indicator 13 is reached to 3.256% and it refers to the occupation of father, delivery under supervision of others, mother suffers from blood pressure.
- Indicator 14 is suffering of mother from certain disease, and it came to 3.039%.

5.2 Recommendations

1. To reduce newborn mortality, timing of intervention is essential, improving emergency obstetric care, essential newborn care and management of preterm, low birth weight and infection in the immediate post-partum period, are likely to reduce infant mortality significantly. extra care for underweight babies by support for breastfeeding mothers.

2. Training midwives to raise their competence to carry out the required quality of their work, as they impact on children's lives and maternal health, preparing the health centers to receive births because the health center is nearest health unit for community.
3. Scale up child survival interventions through successful programs, such as the expanded programs of Immunization, relatively high antenatal care attendance and the integrated child health campaigns. Other community-based interventions, including Community Integrated Management of Childhood Illnesses.
4. To raise Awareness is important to send educational messages to the community in order to help families learn essential skills and basic health knowledge, particularly in the care of newborns. This includes best practices in breastfeeding and complementary feeding and ideal action when their child is sick.
5. The interventions of the government in contributing in the treatment of under-five children or participate with families are very essential step to reduce the under-five mortality.

5.3 Suggestions for further research

- Community studies to assess the community behaviors of seeking child health to ensure healthy lives for all at all age.
- Statistical analysis studies in order to investigate the relation between health services provided to under-five children in public and private sector and patient satisfactions.