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# Determinants of Rural and Urban Postnatal Care Differentials among Newborns in Tanzania

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## Ikisiri

*Utafiti huu ulichunguza vigezo vya huduma kwa mama na mtoto baada ya kujifungua katika maeneo ya vijijini na mijini nchini Tanzania. Utafiti huu ulitumia data za maktabani hususani kutoka kwenye Utafiti wa Kitaifa wa Afya ya Uzazi na Mtoto na Viashiria vya Malaria (TDHS-MIS) wa mwaka 2015/2016.Utafiti huu ulitumia mkabala wa "Multivariate Oaxaca Blinder Decomposition" ili kubaini pengo katika huduma kwa mama baada ya kujifungua na mtoto wake mchanga kati ya maeneo ya mijini na yale ya vijijini nchini Tanzania. Matokeo yalionesha kuwa, katika maeneo yote mawili; mahali ambapo wanawake wanajifungulia, kiwango cha uwezo wa kujifungua, na umbali wa vituo vya afya vilihusishwa kwa kiasi kikubwa na huduma duni kwa mama baada ya kujifungua na mtoto wake mchanga. Aidha, ilibainika kwamba mahudhurio ya kliniki kwa mama mjamzito, ufuatiliaji wa vyombo vya habari, bima ya afya, elimu ya mama, na hali ya kipato zilihusishwa sana na huduma bora kwa mama baada ya kujifungua na mtoto wake mchanga. Utafiti umeonesha pia tofauti ya athari za sababu za kijamii na kiuchumi katika utoaji wa huduma kwa mama bada ya kujifungua na mtoto wake mchanga kuwa na mchango mkubwa. Utafiti huu unapendekeza kuongeza idadi ya vituo vya afya na kusisitiza matumizi sahihi ya vituo vya huduma ya afya pamoja na kuzingatia misingi ya ubora wake ili kuboresha huduma kwa mama baada ya kujifungua na mtoto wake mchanga.*

## Abstract

*This study examined determinants of rural and urban postnatal care differentials among newborns in Tanzania. The study used secondary data from the national cross-sectional Demographic and Health Survey (TDHS-MIS) for 2015/2016. Multivariate Oaxaca blinder decomposition was employed to decompose the gap in postnatal care between urban and rural in Tanzania. Findings disclosed that for both areas, place of delivery, childbirth size, and distance to health facilities were statistically significantly associated with low postnatal care. In addition, it was uncovered that ANC visits, media exposure, health insurance, maternal education, and wealth status were statistically significantly associated with high postnatal care. Moreover, distribution variations of socio-economic factors significantly contributed to the reduction in postnatal care. The variation of effects of socio-economic factors on differences in postnatal care seemed to have a significant positive contribution. The study recommends increasing the number of health facilities and re-emphasizing not only the proper utilization of health facility delivery but also emphasizing its quality to promote pertinent postnatal care services.*

**Keywords**: Postnatal Care, Multivariate Oaxaca Blinder Decomposition.

## 1.0. Introduction

The first 28 days of life, (the neonatal period) is the most vulnerable time for a child's survival. Postnatal Care (PNC) is the period after delivery until six weeks after birth, and health checks during this time, especially the first two days, are essential. The World Health Organization (WHO) recommends on PNC that for every uncomplicated vaginal birth in a health facility, healthy newborns should receive care in the facility for at least 24 hours (WHO, 2013). In case the birth occurs at home, the first postnatal contact should be at least within 24 hours of birth. Regardless of the place of delivery, at least three additional postnatal contacts are recommended for all mothers and newborns, on day three (48-72 hours), between days seven and 14 as well as six weeks after birth (WHO, 2013).

Globally, the health and well-being of neonates are still issues of concern for ages, since 2.4 million newborns died in the first month of life in 2019(UNICEF, 2020). Approximately 6,700 neonatal deaths occur every day, with about a third of all neonatal deaths occurring within the first day after birth, and close to three-quarters occurring within the first week of life (UNICEF, 2020). The postnatal period is a vital opportunity to improve neonatal health and wellbeing in the following aspects: supporting healthy behaviours; providing life-skills education to neonates' mothers; facilitating breastfeeding; counseling women about family planning options; and preventing as well as treating childbirth-related complications (WHO, 2020).

Providing high-quality and comprehensive postnatal primary care is a global goal for improving maternal as well as newborn health in the first year of life (UN, 2015). Every Newborn Action Plan (ENAP) targets are aligned with the Strategic Development Goal (SDG) target 3.2 and the proposed Every Woman Every Child (EWEC) monitoring framework aims to end neonates' mortality by 2030(WHO, 2018). In due regard, all countries aim at reducing neonatal mortality to at least as low as 12 deaths per 1,000 live births and 12 or fewer stillbirths per 1000 total births in every country (UNICEF, 2020). Notably, ending preventable newborn mortality requires effective strategies and interventions to improve newborns' health as well as enhance monitoring, and understanding of mortality trends. One of the main interventions is health promotion that has to occur in the postnatal period.

Despite the importance and efforts of PNC for both maternal and child survival, postnatal care consistently has the lowest coverage of interventions on the continuum of maternal and childcare. It was reported that an average of 28 per cent of women take their infants for postnatal check-ups, ranging from 5 per cent to 99 per cent (WHO, 2015). In addition, the United Nations Children's Fund (UNICEF) brief report of 2019 showed that just 48 per cent of newborns, worldwide, received postnatal care within the approved timeframe.

More than 90 percent of women in developed regions, such as the Americas and Europe, complied with World Health Organization (WHO) recommendations compared to only 37 percent in low- and middle-income countries (UN, 2018). Studies in countries such as Myanmar,

India, and Nepal have shown that the level of use of the PNC ranges from 10 percent to 60 per cent (Paudel et. al, 2014).

Sub-Saharan Africa has the world's highest rates of neonatal mortality with an estimated 1.2 million deaths within the first 28 days of life (WHO, 2020). Still, the region has seen slower progress in neonatal mortality rates than others. This indicates that postnatal care is among ignored agendas rather than all other reproductive and child health programmes, despite a Maternal, Newborn, and Child Health (MNCH) continuum of care is emphasized. Only 13 percent of mothers in Sub-Saharan Africa were able to achieve Complete Postnatal Care (CPNC) in compliance with WHO recommendations (WHO, 2014).

While improvements have been made to increase the accessibility of most maternal and child health services, reports have shown that the national prevalence of PNC use in Ethiopia was still low at 17 percent coverage (CSAE, 2016). Likewise, in Kenya, most women and newborns do not visit health institutions after birth implying that post-natal services are among neglected agendas rather than all other reproductive and child health programmes. The magnitude of postnatal care service utilization is very low, at about 47 percent in Kenya (Akunga *et al*., 2014).

Similarly, the 2015-16 Tanzania Demographic Health Survey (TDHS) shows that coverage of health interventions is the lowest during childbirth and the postnatal period, which are periods when PNC among newborns is the most essential (NBS, 2016). Even with these reductions in death rates and efforts, there is still concern about the high rates of death among newborns in Tanzania, at 25 per 1,000 live births (NBS, 2016). The Ministry of Health, Community Development, Gender, Elderly and Children is responsible for the provision of preventive services including postnatal care for newborns (NBS, 2016). In addition, the Ministry works closely with development partners like UNICEF to address challenges in accessing postnatal care, with a specific focus on reproductive, maternal, newborn, child, and adolescent health (UNICEF, 2020).

The Government of Tanzania has advanced several measures, directly and indirectly, all intending to achieve newborns' health goals as outlined in the 2030 Agenda (Strategic Development Goals, SDGs) as well as to increase access to and use of MNCH services. They include the use of community health workers (CHW), the use of mothers as peer educators, mobile health clinics and outreach programmes (regularly using mobile vans or buses under the rubric, clinic on wheels) and occasionally conducting home-based health services (UNICEF, 2018)

Despite the said efforts, newborns' postnatal care services remain one of the health problems in Tanzania. According to the 2015/16 Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS), only 42 percent of newborns are checked for PNC within 48 hours after birth as recommended, regardless of an increase in facility deliveries and the availability of crucial related services. In addition, there was a high regional disparity and urban-rural

inequity in access to available maternal and newborns services across the country.

Postnatal care services in urban areas are higher by 27 per cent than in rural areas which account for 16 percent of both mainland Tanzania and Zanzibar. Thus, there is a notable difference in postnatal care services usage among newborns who reside in rural areas as compared to their counterparts in urban areas. This implies that there is no substantial utilization of newborns' postnatal care in rural settings compared to urban settings. Therefore, this study sought to determine factors associated with such differences between rural and urban areas pertaining to postnatal care services.

## 2.0. Literature Review

Social cognitive theory states that learning occurs in a social context with dynamic and reciprocal interaction of the person, environment and behaviour (Bandura, 2011). It emphasizes on social influence on external and internal social reinforcement, and health promotion. Most theories focus more on initiating behaviour than on the maintaining it, which is the goal in public health. Social cognitive theory thoroughly explains how people regulate their behavior through control and reinforcement to achieve goal-related behaviour that is maintained overtime (Bandura, 2011). It observes behavioural differences (people's characteristic differences), that may reflect what people had acquired between rural-urban and the way it affected their health. This study used social cognitive theory to explain why differences in public health (postnatal care services) are associated with endowments and coefficient changes.

Researchers have used a number of variables that have significance in influencing the newborn postnatal care in different studies, but this study focused on demographic factors including childbirth size, birth order and mother's age at birth and socio-economic factors such as the current level of education of a mother, ANC visits, wealth status, mass media, the place of delivery and distance to the health facilities.

Atuhaire *et al.*, (2021) studied regional differentials in early antenatal care, health facility delivery and early postnatal care among women in Uganda using Oaxaca' blinder multivariate decomposition method. The results of the decomposition showed that the overall gap in PNC would reduce in maternal education by 18.5% if differences in maternal education were to disappear and increase by 52.8% and 8.4% in the absence of the variation in effects of maternal education and wealth quintile respectively. In addition, Langa and Bhatta (2020) conducted a study on the rural-urban divide in Tanzania, the residential context, and socioeconomic inequalities in maternal health care utilization using logistic regression analysis. The study found that there was a lower odd of the utilization of postnatal care services among mothers of newborns with lower levels of education and household wealth. The educational inequalities in postnatal care were significantly wider in rural than urban areas.

Moreover, study conducted by Yadav and Jena, (2020) related to changing patterns and inequalities in maternal healthcare services utilization in India using Oaxaca decomposition method. The results on the

decomposition analysis showed that women's education, mass media exposure and women's age at birth of their first child contributed an important share to the gap in maternal healthcare services utilization, PNC among newborns being one of them. Bwalya *et al*. (2017) carried out a study on newborn PNC, with data from 2013-14 Zambia Demographic and Health Survey (ZDHS). The study used stepwise binary and multinomial logistic regression analyses. Results from the study revealed that mothers' exposure to media was found to be a factor affecting newborn PNC. It was uncovered in the study that access to media increased the odds of having PNC within 48 hours such that nearly three-fourths (73%) of the mothers of newborns delivered in a health facility had access to media compared with about half (54%) of mothers of newborns delivered at home. Therefore, mothers' exposure to media influences a mother 's behaviour during postnatal care to improve the newborn's health.

Lyanda (2017) applied thematic analysis to study factors affecting newborns' postnatal care in Kenya, and found out that mothers' exposure to mass media was statistically a significant factor affecting newborn PNC. Mass media such as newspaper, radio broadcasts and, television broadcasts are highly accessible to urban dwellers, and this is reason why women who reside in urban areas utilize PNC services more than rural dwellers. Availability of information, health seeking behaviour and improved knowledge about PNC are interrelated factors that can influence on PNC utilization. Kumola (2017) studied newborn care practices among postnatal mothers in Garissa County, Kenya using logistic regression analysis and found that ANC visits were a statistically significant factor. The logistic regression analysis revealed that across all three newborn practices, timing of the first ANC visit (P value <0.001) had significant influence on newborn care practices.

Furthermore, Otunga (2017) conducted the study on assessment of utilization of postpartum care services in Bungoma County in Kenya and found that distance in the health facility had association with utilization of PNC. It was further disclosed that about 47.32% of participants travelled a distance between 1 and 2 hours on foot and 19.88 percent required more than 2 hours, whereas 32.80 percent of participants travelled less than 1 hour to nearby health centres. Yaya *et al*. (2016) conducted a study in Malawi that included variables such as a binary outcome variable and the independent variables including the mother's education level and wealth status. Results showed that mother education had a significant influence on newborn PNC. In addition, results showed that wealth status of mother or household have impact on newborn PNC. Thus, the study found significant disparities in early use of PNC services among mothers and their newborns in Malawi due to different geographical factors.

Agho *et al*. (2016) carried out a study on factors affecting non-PNC use by employing multilevel regression analysis in Nigeria. Results from the study revealed that distance to health facilities has a great negative effect on the use of PNC services such that women who reside in rural areas have difficulties in accessing care compared to those who residein

urban areas. Somefun and Ibisomi (2016) conducted a study on factors affecting PNC in Nigeria using multivariate logistic regression analysis and found that women who had secondary school certificate holders or possess a higher diploma attended PNC services more than women who did not have any form of formal education. In addition, educated husbands were found to have better chances of allowing their wives to attend PNC services than illiterate ones and it was noted that the higher the women's educational level, the better they utilize PNC services. Moreover, Owili (2016) conducted a systematic review study in sub-Saharan Africa and concluded that ANC as well as institutional delivery were not associated with utilization of PNC. It was noted in the study that there was an association between ANC and institutional delivery but not with PNC.

## 3.0. Materials and Methods

### 3.1. Oaxaca Decomposition Model Framework and Estimation Technique

To explain the urban-rural disparities in PNC among newborns, the Blinder-Oaxaca Decomposition (Blinder Oaxaca, 1973) or Multivariate Oaxaca Decomposition Analysis was employed. This technique decomposes the gap in postnatal care between urban and rural areas into two parts, a part that is due to differences in the distribution of the determinants of PNC (covariates effect) between the two areas, and another part that is due to differences in the effect of these determinants (coefficients effect) between the two areas.

### 3.2. Research Design

The study employed a cross-sectional research design to analyze factors predicting the utilization of newborn PNC services in Tanzania. Tanzania Demographic Health Survey and Malaria Indicator Survey (TDHS-MIS) for 2015/16 was used to determine the relationship between newborn PNC and explanatory variables together with newborn PNC differentials between rural and urban areas. TDHS-MIS is the national sample survey conducted every five years with the primary objective of providing up-to-date estimates of basic demographic and health indicators.

### 3.3. Study area

The study was conducted in the United Republic of Tanzania, an East African country known for its high neonatal mortality rate whereby in 2019, neonatal mortality rate was 20.3 deaths per 1000 live births (WHO, 2020). In Tanzania, prematurity, asphyxia, congenital malformation and infections have been reported as leading causes of death among neonates to achieve national and international goals. Moreover, neonatal mortality rate in rural areas is recorded at 24 deaths per 1000 live births compared with 43 deaths per 1000 live births in urban areas and thus, showing an urban-to-rural ratio of 1.8 according to the TDHS of 2015-16 (WHO, 2015). This study covered the sampled households from all administrative regions on Tanzania's mainland.

### 3.4. Study Variables

The dependent variable was the baby postnatal check within two months, coded 1 if the baby checked for postnatal care and 0 if the baby did not check for postnatal care. The independent variables used included the mother's education level, maternal age, distance to the health

facility, birth order, access to health insurance, place of delivery, mothers' ANC visits, mothers' exposure to media, wealth status, mother currently working, and childbirth size.

## 4.0. Results and Discussion

### 4.1. Oaxaca Decomposition method results

A multivariate decomposition model was used to decompose differences in PNC between newborns in urban and rural areas attributed to variations in their characteristics/endowments (E) and variation in effects of predictors/coefficients (C). Decomposition results of differences in utilization of newborns' PNC by background characteristics are presented in Tables 1 and 2, respectively. Results in Table 1 reveal that variations in newborns' PNC between the areas were significantly attributed to both variations in the distribution and variations in the effects of predictors ($p<0.05$). Overall, about 59.47 percent of the gap in newborns' PNC utilization was attributed to variations in distributions of newborns' predictors or endowments in both areas. On the other hand, 40.53 percent of the gap was attributed to variations in the effects of predictors or coefficients in both areas.

**Table 1: Summary of decomposition of newborns' PNC services**

| Components | Coefficients | P-value | percent |
|---|---|---|---|
| E | 0.054395 | 0.001 | 59.47 |
| C | 0.037075 | 0.041 | 40.53 |
| R | 0.09147 | 0.000 | 100 |

Source: Modified from the field, (2021)

Note: overall decomposition results of NPNC; n=12,512: variations to differences in endowments (E) and effects of coefficients(C); R is the total variation

#### 4.1.1. Differential in the PNC due to variation in newborn's distribution of predictors (endowments)

Table 2 presents the overall differences in characteristics of newborns that contributed about 59.47 per cent to the overall gap in PNC between the two areas. Specifically, the differences significantly resulted from the distribution of maternal education, wealth status, distance to the health facility, health insurance, and place of delivery ($p < 0.05$). In addition, differences in these characteristics of newborns contribute about 10.7 percent, 40.8 percent, 3 percent, 2.9 percent, and 30.6 per cent to the overall gap in PNC in rural and urban areas, respectively.

The positive percentages in the results show the proportion in which the overall gap would reduce if the differences in characteristics of newborns in the two areas were to disappear since they were the highest contributors to widening the rural to the urban gap in newborns' PNC. On the other hand, the negative percentages show that the proportion to which the gap in PNC would increase if differences in characteristics of newborns in the two areas were to disappear since they contributed to the reduction of the rural to the urban gap in newborns PNC.

The overall gap in PNC between urban and rural areas would reduce mainly by 40.8 per cent, 10.7 percent, 3 percent, and 2.9 percent if differences in maternal

education, wealth status, distance to the health facility, and health insurance were to disappear and decrease by 30.6 percent if differences in place of delivery were to disappear.

Moreover, findings show that if the distribution of households, whose distance to a health facility was a problem compared to no problem was the same in rural and urban areas, PNC among newborns in rural would significantly (p=0.024) be higher than that of urban by 3 percent. This finding is consistent with the findings of previous national and sub-national studies from India, Uganda, and Nigeria, whereby the studies concluded that the lower use of PNC services among newborns is mainly because of disadvantages in rural areas, especially in transport facilities (Lyanda, 2017; CSAE, 2016).

However, the PNC among newborns in rural would significantly (p=0.01 and p=0.004) be higher than that of urban by 40.1 percent if the distribution of newborns from middle and rich households compared to those from poor households were the same in rural and urban areas. This finding is consistent with the findings of the previous national and sub-national study in Uganda that better economic status is associated with relatively better education status and an affordable cost of service, both of which are favourable for better use of healthcare services (Atuhaire *et al*., 2021).

Furthermore, results in Table 2 show that if the distribution of newborns delivered at health facilities compared to those delivered at homes was the same in rural as that in urban, PNC among newborns in rural would significantly (p=0.001) be lower than that of urban by 30 percent. Therefore, such differences in health facility delivery to those of home delivery explain the total variations of PNC among newborns between rural and urban areas. This finding is consistent with the findings of a previous study explaining changing patterns and inequalities in maternal healthcare services utilization in India (Yadav and Jena, 2020).

Besides, the results Table 2 show that if the distribution of households with health insurance compared to those with no health insurance was the same in rural as that of urban, PNC among newborns in rural would significantly (p=0.000) be higher than that of urban by 2.9 percent. A similar study found significant disparities in the early use of PNC services among mothers with health insurance compared to those with no health insurance in Malawi (Yaya *et al*., 2016).

### 4.1.2. Differential in PNC due to variation in newborn's effects of predictors (coefficients)

The results in Table 2 show the different effects of predictors on PNC between urban and rural areas, which contribute about 40.53 per cent to the overall change. Specifically, the variations were significantly attributed to variation in effects of characteristics namely; health insurance and place of delivery (p<0.05). Results from Table 2 show that the different effects of predictors (coefficients) on newborns contributed to about 94 per cent, 10.9 per cent and -57.3 percent of the overall gap in PNC among newborns in urban and rural areas, respectively.

In particular, the overall gap in PNC between the two areas would increase, on

average, by 57.3 per cent in absence of variation in the effects of health insurance and decrease, on average, by 94 per cent and 10.9 per cent in absence of variation in effects of maternal education and place of delivery, respectively.

In addition, results in Table 2 show that if newborns' mothers have health insurance, their PNC would be higher than those without health insurance. This fact is supported by the results in Table 2, which show that the PNC in rural areas would be significantly (p=0.001) higher than that of urban areas by 10.9 per cent due to variation in the effect of households with health insurance in the absence of effects from other variables.

Furthermore, findings in Table 2 show that in rural (ME=0.001) and in urban (ME=0.008), indicating that the effect of facility delivery lowered supporting reduction in PNC utilization. This fact is supported by Table 2, which shows that the PNC in rural areas would be significantly (p=0.007) lower than that of urban areas by 57.3 per cent due to variation in the effect of newborns delivered at health facilities in the absence of effects from other variables.

**Table 2: Decomposition of newborns' PNC due to differences in characteristics and effects of coefficients**

| Variables | Differences in characteristics (E) | | | Differences in effects of coefficients (C) | | |
|---|---|---|---|---|---|---|
| | Coefficient | p-value | percent | Coefficient | p-value | percent |
| Maternal education | | | | | | |
| None | 1 | | | 1 | | |
| Primary | -0.0072 | 0.000 | -7.9 | 0.0676 | 0.006 | 73.9 |
| Secondary | 0.0147 | 0.006 | 16.3 | 0.0182 | 0.008 | 19.9 |
| Higher | 0.0023 | 0.040 | 2.5 | 0.0001 | 0.559 | 0.2 |
| Mother's ANC visits | | | | | | |
| None | 1 | | | 1 | | |
| 1-3 | -0.0102 | 0.246 | -11.2 | -0.0653 | 0.237 | -71.3 |
| >=4 | 0.0136 | 0.116 | 14.8 | -0.0675 | 0.211 | -73.8 |
| Wealth status | | | | | | |
| Poor | 1 | | | 1 | | |
| Middle | -0.0202 | 0.010 | -22 | 0.0243 | 0.73 | 26.6 |
| Rich | 0.0560 | 0.004 | 62.27 | 0.0262 | 0.048 | 28.7 |
| Distance to the health facility | | | | | | |
| No problem | 1 | | | 1 | | |
| Problem | 0.0028 | 0.024 | 3.0 | -0.0143 | 0.458 | -15.6 |
| Childbirth size | | | | | | |
| Big | 1 | | | 1 | | |
| Average | 0.0013 | 0.008 | 1.4 | -0.0115 | 0.503 | -12.5 |
| Small | 0.0015 | 0.063 | 1.6 | 0.00150 | 0.729 | 1.6 |
| Health insurance | | | | | | |
| No | 1 | | | 1 | | |
| Yes | 0.0026 | 0.000 | 2.9 | 0.0100 | 0.001 | 10.9 |
| Maternal working | | | | | | |
| No | 1 | | | 1 | | |
| Yes | -0.0011 | 0.116 | -1.2 | 0.0364 | 0.079 | 39.82 |
| Birth order | | | | | | |
| 1st born | 1 | | | 1 | | |
| 2nd born | 0.0056 | 0.056 | 6.1 | 0.0069 | 0.057 | 7.5 |
| 3rd born | 0.0011 | 0.665 | 1.2 | 0.0068 | 0.323 | 7.4 |
| 4th and higher order | 0.0066 | 0.381 | 7.2 | 0.0419 | 0.119 | 45.8 |
| Place of delivery | | | | | | |
| Home | 1 | | | 1 | | |
| Health facility | -0.0280 | 0.001 | -30 | -0.0524 | 0.007 | -57.3 |
| Exposure to media | | | | | | |
| No | 1 | | | 1 | | |
| Yes | 0.0072 | 0.292 | 7.9 | -0.0216 | 0.080 | -23.6 |
| Constant | | | | 0.02436 | 0.861 | 26.6 |

Source: Modified from the field (2021)

## 5.0. Conclusion and Recommendations

### 5.1. Conclusion

There was a higher PNC among newborns from educated mothers than among those from non-educated mothers in both areas. Education generally improves awareness and compliance to therapy and it is believed that the more a woman is educated, the better she would readily understand the surrounding environment by learning. Moreover, in the case of PNC utilization, it is expected that educate mother could adapt easily to the methods of how to protect herself and baby during and after pregnancy.

The PNC is substantially higher in urban areas than in rural areas which imply more efforts should be made to increase health facilities in rural areas to overcome the problem. Newborns delivered at home are at a greater risk of not getting PNC in time than newborns delivered in health facilities. Communication activities and interventions should be stirred up to address the importance of newborns being delivered in health facilities. This can be done by creating national-wide slogans, making posters, and making use of the advancement of technology by using social media, mass messaging, TV stations, and radio stations to spread awareness on the importance of PNC utilization.

Wealthier households had higher chances of getting PNC than poor households. Efforts to increase the accessibility of quality social services should be made by both the government and other stakeholders. This will help to improve the standard of living of the people and raise their socio-economic status, thus increasing their ability to afford health services. The findings indicated that households near health facilities have higher chances of getting PNC than those in distant places. It implies that the nearer a household is, the easier it is for newborns to acquire health services and be engaged in different health initiatives, along with benefits such as PNC services.

Immediate care involves drying the baby with warm towels or cloths while it is placed on the mother's abdomen or in her arms. Such mother-to-child skin-to-skin contact is important to maintain the baby's temperature, enhance bonding and expose the baby to the mother's skin bacteria, how to feed the baby and sleeping advice – all reduce the risk of Sudden Newborn Death Syndrome. Thus, an increasing proportion of newborns receiving the services leads to an increase in PNC . Newborns mothers with health insurance increase PNC utilization. This implies that not having health insurance may make it difficult for newborns to afford some of the PNC related services.

### 5.2 Recommendations for Policy Implication

The study provides the following recommendations:

i. Efforts to increase the accessibility of postnatal care services should be made by both the government of Tanzania through the Ministry of Health and other stakeholders especially in rural areas. This will increase attendance at health facilities due to the fact that households that are near to health facilities have higher chances to utilize postnatal care services than

those leaving in distant places as shown by study findings.

ii. The government of Tanzania through the Ministry of Health and other stakeholders should emphasize the equal and broad dissemination of newborns' health and continuum of care information across the country and pass the spending bill on insurance to reduce the costs of accessing maternal health services.

iii. Having identified a significant effect of maternal education on postnatal care services utilization, the researcher recommends that girls should be provided with even more opportunities in education especially maternal education. This will help scaling-up postnatal care services utilization and reinforces the importance of girl-child education as a means of women's empowerment.

iv. Since the study found that wealth status increases the chance of postnatal care services utilization, the government of Tanzania through the Ministry of Health should tailor policies that empower women by increasing the accessibility of resources and opportunities especially in rural areas.

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