

Knowledge, Attitude and Practice regarding Intermittent Preventive Treatment (IPTs) of Malaria among Pregnant Women Attending for Antenatal Care in Benadir Hospital at Benadir Region, Somalia

Abdullahi Muse Mohamoud^{1,2*}, Magda Elhadi Ahmed Yousif², Osman Khalafalla Saeed², Mohamed Ahmed Allasow¹, Yasmin Abdirahman Abdulle¹, Ayan Abdiwali Ahmed¹, Anab Warsame Iye¹, Shukri Mohamed Abdi¹

¹Faculty of Health Sciences, Benadir University, Mogadishu, Somalia

²PHC & HE, Faculty of Medicine, University of Gezira, Wad Madani, Sudan

Email: *cabdallamm7@gmail.com

How to cite this paper: Mohamoud, A.M., Yousif, M.E.A., Saeed, O.K., Allasow, M.A., Abdulle, Y.A., Ahmed, A.A., Iye, A.W. and Abdi, S.M. (2022) Knowledge, Attitude and Practice regarding Intermittent Preventive Treatment (IPTs) of Malaria among Pregnant Women Attending for Antenatal Care in Benadir Hospital at Benadir Region, Somalia. *Health*, **14**, 392-406.

<https://doi.org/10.4236/health.2022.144031>

Received: January 15, 2022

Accepted: April 9, 2022

Published: April 12, 2022

Copyright © 2022 by author(s) and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Background: Malaria in pregnancy is a preventable public health concern leading to a high prevalence of maternal morbidity, maternal mortality and adverse birth outcomes. Intermittent Preventive Treatment during pregnancy using Sulfadoxine-Pyrimethamine (IPTp-SP) is one of the main strategies used to prevent malaria in pregnancy. This study was aimed to determine knowledge attitude and practice regarding intermittent preventive treatment IPT of malaria in pregnancy utilization among pregnant women attending antenatal center in benadir hospital wadajir district benadir region somalia during the period of the study from April 2021-July 2021. **Methods:** The study was descriptive cross-sectional retrospective Hospital based. The sample size was 60 respondents of pregnant women at 20 weeks to 36 weeks of gestation. Data were collected by interview method using structured questionnaire. The data were collected and then entered to Statistical Package for Social Science version 20 for analysis. **Results:** The study displayed that the majority of the respondents (58%) were in the 25 - 34 years' age group. A total of 51 (85%) were married, while 17 (28%) had primary school education. 43 (72%) were housewives while only 11 (18%) were employed. A total 32 (53%) were had gravid more than Four times, while the study showed that, the majority of mothers 39 (65%) were had knowledge about Intermittent Preventive Treatment during pregnancy using Sulfadoxine-Pyrimethamine (IPTp-SP). The

study showed that majority of the respondent 25 (42%) were getting health education awareness towards IPTp were from health care providers at health centers while 8 (13%) from Friends/relatives/neighbors, followed by 4 (6%) from their husband. And 34 (57%) were had convenience IPTp-SP tablet consumption at their current pregnancy while 26 (43%) did not. **Conclusion and Recommendations:** Inclusion there was good knowledge and positive attitude towards IPT despite poor utilization, the study recommended the ministry of health especially health promotion, maternal and reproductive health and national malaria control programe should intensify strategies and policies to ensure 3 doses of IPTp-SP given at antenatal care centers target coverage in Somalia and provide capacity building for all health care providers. Also, there should be continuous sensitization of pregnant women on the importance of intermittent preventive treatment during each pregnancy by healthcare workers.

Keywords

Intermittent Preventive Treatment (IPT), Antenatal Care

1. Background

Malaria infection during pregnancy is a major public health problem, with substantial risks for the mother, her fetus and theneo-nate. Intermittent preventive treatment of malaria inpregnancy is a full therapeutic course of antimalarial medicine given to pregnant women at routine antenatal care visits, regardless of whether the woman is infected with malaria or not. IPTp reduces maternal malaria episodes, maternal and fetal anaemia, placental parasitaemia, low birth weight, and neonatal mortality [1].

Globally, malaria causes 229 million cases of illness each year and is the leading cause of morbidity and mortality, especially among the pregnant women and children under the age of five years [2]. Of the estimated 1 - 3 million malaria deaths recorded globally each year, about95% of malaria deaths globally were in 31 countries; Nigeria (23%), the Democratic Republic of the Congo (11%), the United Republic of Tanzania (5%), Mozambique (4%), Niger (4%) and Burkina Faso (4%) accounted for about 51% of all malaria deaths globally in 2019 [2]. More than 30 million African women in malaria endemic areas become pregnant and are at risk of infection with Plasmodium falciparum. This results in high prevalence of parasitemia and clinical malaria in pregnancy [3].

Malaria in pregnancy causes up to 10,000 maternal deaths each year and contributes to high rates of maternal morbidity especially in first-time mothers [4] [5].

Malaria in pregnancy increases the risk of miscarriage, stillbirth and low birth weight and placental parasitaemia and 75,000 to 200,000 infant deaths annually are attributable to malaria infection inpregnancy [6].

Global Malaria Control Strategy was adopted in the year 1992 as a reaction to

the growing malaria burden. In the year 1998, the WHO, United Nations Children's Fund (UNICEF), United Nations Development Programme (UNDP) and the World Bank established a Roll Back Malaria partnership in order to coordinate the global efforts in combating malaria. Their aim was to reduce the malaria burden by half (50%) by the year 2010. Heads of state, from 44 malaria endemic areas in Africa aggregated in Abuja for the African Summit on Roll Back Malaria in the year 2000. During this summit, the leaders through a declaration, committed to "ensuring that sixty percent of pregnant women living in malaria-endemic communities accessed effective prevention and treatment of malaria by the year 2005" [1]. This target has been revised to 100% by the year 2015 and to date still stands at 100% [1].

Previously the WHO recommended a full treatment with an antimalarial drug during the first antenatal care visit, weekly chemoprophylaxis for all pregnant women in malaria endemic regions. The most frequently used drug for this chemoprophylaxis was chloroquine. However widespread resistance of *P. falciparum* malaria to chloroquine, adverse effects, the bitter taste associated with it and poor compliance to the utilization of weekly regimen throughout pregnancy proved as limitations to this strategy" [1].

Since the year 2003, the WHO recommends "a three-pronged approach for the control of malaria in pregnant women living in areas of moderate to high malaria endemic regions in sub-Saharan Africa". These strategies include provision of intermittent preventive treatment for malaria in pregnancy (IPTp) with sulfadoxine pyrimethamine (SP), use of insecticide-treated nets and prompt diagnosis and treatment of confirmed infection [1].

General objective

The general objectives of the study were to determine knowledge attitude and practice regarding intermittent preventive treatment IPT of malaria in pregnancy utilization among pregnant women attending for antenatal care in benadir hospital wadajir district benadir region somalia 2021.

Specific Objectives

- To identify knowledge of utilization of intermittent preventive treatment (IPTs) of malaria in pregnancy among pregnant women attending in Benadir Hospital 2021.
- To determine attitude of utilization of intermittent preventive treatment (IPTs) of malaria in pregnancy among pregnant women attending Benadir Hospital 2021.
- To assess practice of utilization of intermittent preventive treatment (IPTs) of malaria in pregnancy among pregnant women attending in Benadir Hospital 2021.

2. Methodology and Material

2.1. Study Design

This study was descriptive cross-sectional Hospital-based.

2.2. Study Populations

- Medical record of pregnant women who had received IPTp-SP during their ANC visit at Benadir Hospital from January 2018 to December 2020.
- The target population was pregnant women at 13 weeks to 36 weeks of who attended the antenatal clinic at Benadir hospital wadajir district Benadir region Somalia during the period of the study from April 2021-July 2021.

2.3. Study Area

Benadir Hospital is the biggest maternal and child health hospital in capital city Mogadishu Somalia. The hospital has departments, and sub-units that deal with different healthcare aspects. Maternity ward; pediatrics ward, Neonate unit, ANC unit, PNC unit, delivery unit, OT unit, OPD unit, Family planning unit, Isolation unit, CTC unit, TB unit, non communicable disease, Other departments includes; Laboratory unit, X-ray unit, HIV unit, drug store and pharmacy unit, blood bank unit.

2.4. Sampling Technique and Sample Size

The sampling technique of this study was Non-Probability Convenient sampling.

The sample size of this study was selected 60 respondents of pregnant women at 20 weeks to 36weeks of gestation who attended the antenatal clinic at Benadir hospital wadajir district Benadir region Somalia 2021.

2.5. Study Variable and Their Indicators (Table 1)

As shown in (Table 1) indicated the independent variables which associated with the study.

Table 1. Study variable and their indicators.

| Variable | Indicator | Data Collection tool |
|-----------------------------------|--|----------------------|
| Socio-demographic characteristics | <ul style="list-style-type: none"> • Age • Residence • Marital Status • Level of Education • Occupation • Gravidity: (No of pregnancy)... • Parity: (No of livebirths)... | Questionnaires |
| Knowledge | <ul style="list-style-type: none"> • Awareness of IPTs • Sources of Awareness | Questionnaires |
| Attitudes | <ul style="list-style-type: none"> • Acceptance/convince IPTs uptake • Permission for IPTs Uptake • Usefulness IPTs-SP • Fear of IPTs-SPSide effect | Questionnaires |

Continued

| | | |
|----------|---|----------------|
| Practice | <ul style="list-style-type: none">• ANC Attendance• Frequency ANC Attendance• Uptake IPTs-SP given at ANC• Time to Uptake IPTs-SP given at ANC• Practice of DOTs of IPTs-SP given at ANC• Reasons of not Uptake IPTs-SP given at ANC | Questionnaires |
|----------|---|----------------|

2.6. Method of Data Collection

During the study, different tools were used for collecting data from different sources.

Secondary sources: including books reports, hospital records, published papers, official documents, etc.

Primary sources: was carried out using interviewer-administered questionnaire that was designed into two parts first part contain socio-demographic information, which's of age, residence, educational level, occupation and second part which include knowledge, attitude and practice regarding intermittent preventive treatment IPTp of malaria in pregnancy utilization among pregnant women attending antenatal center in Benadir hospital wadajir district Benadir region Somalia 2021.

2.7. Data Analysis

The data were conducted, processed and transferred to computer coding. A variables' descriptive screening was adopted which includes percentages, means frequency distribution tables and figures by using Statistical Package for Social Sciences SPSS Version 16 computer program, 0.05 was used as a cut off significance value.

2.8. Ethical Considerations

A permission was obtained from Benadir Hospital, both the hospital administration and respondents were made aware of the facts that the research is purely an academic requirement and the information provided will not be used for another purpose.

3. Result

In **Table 2**, the result indicated that the majority of the respondents 35 (58%) were aged between 25 - 34 yrs while 16 (27%) were aged between 15 - 24 yrs followed by 9 (15%) were aged between 35 - 44 yrs, 51 (85%) were married while 5 (8%) were Windowed followed by 4 (7%) were Divorced, 24 (40%) were illiterate, followed by 17 (28%) were primary education level, 13 (22%) were secondary level While only 6 (10%) were university level, 43 (72%) were Housewives, while 11 (18%) were employed and 6 (10%) were students, 22 (37%) were said three times, followed by 19 (32%) were said more than four times, 17 (28%) had

Table 2. Social demographic characteristics.

| | N = 60 | % |
|----------------------------|--------|-----|
| Age Group | | |
| 15 - 24 yrs | 16 | 27% |
| 25 - 34 yrs | 35 | 58% |
| 35 - 44 yrs | 9 | 15% |
| Marital Status | | |
| Married | 51 | 85% |
| Divorced | 4 | 7% |
| Windowed | 5 | 8% |
| Educational Level | | |
| Illiterate | 24 | 40% |
| Primary | 17 | 28% |
| Secondary | 13 | 22% |
| University | 6 | 10% |
| Employment Status | | |
| Housewives | 43 | 72% |
| Employed | 11 | 18% |
| Student | 6 | 10% |
| (No of pregnancy) | | |
| One | 2 | 3% |
| Two | 17 | 28% |
| Three | 22 | 37% |
| More than Four times | 19 | 32% |
| (No of live births) | | |
| One times | 2 | 3% |
| Two times | 7 | 12% |
| Three times | 19 | 32% |
| More than Four times | 32 | 53% |

said three times, while only 2 (3%) were said one time, 32 (53%) were said more than Four times, followed by 19 (32%) were said three times, 7 (12%) were said two times, while only 2 (3%) were had said one time.

In **Table 3**, The result showed that the majority of the respondents 39 (65%) were said yes while 21 (35%) were said no, 29 (48%) were said Is IPTp-SP (Fansidar) tablet given to pregnant women at ANC clinic, followed by 7 (12%) were said drug used to prevent malaria in pregnancy, while only 3 (5%) were said It's WHO recommendation drug for pregnant women to prevent malaria in pregnancy.

Table 3. Knowledge characteristics.

| | N = 60 | % |
|--|--------|-----|
| IPTp Awareness | | |
| Yes | 39 | 65% |
| No | 21 | 35% |
| Definitions | | |
| Is Drug prevent malaria in pregnancy | 7 | 12% |
| Is IPTp-SP (Fansidar) tablet given to pregnant women at ANC clinic | 29 | 48% |
| It's WHO recommendation drug for pregnant women to Prevent malaria inpregnancy | 3 | 5% |
| I don't know | 21 | 35% |
| Source of information of IPTp | | |
| Health care providers at health centers | 25 | 42% |
| Traditional Birth Attendants | 1 | 2% |
| My husband | 4 | 6% |
| Radio &Television | 1 | 2% |
| Friends/relatives/neighbors | 8 | 13% |
| I don't know | 21 | 35% |
| Knowledge doses of IPT pare taken throughout Pregnancy | | |
| One time | 13 | 21% |
| Two times | 16 | 27% |
| Three time | 10 | 17% |
| I don't know | 21 | 35% |
| Knowledge number of tablets of IPT partaken at once | | |
| One tablet | 1 | 2% |
| Two tablets | 9 | 15% |
| Three tablets | 29 | 48% |
| I don't know | 21 | 35% |
| Knowledge gestational (period) months is taken of IPTp | | |
| 1 - 3 Months | 30 | 50% |
| 4 - 6 Months | 6 | 12% |
| 7 - 9 Months | 2 | 3% |
| I don't know | 21 | 35% |

While 21 (35%) said I don't know, 25 (42%) said that main source of the awareness towards IPTp were from health care providers at health centers while 8 (13%) said my Friends/relatives/neighbors, followed by 4 (6%) said my husband,

While 21 (35%) said I don't know, 16 (27%) were said that pregnant women will take IPTp dose two time throughout their pregnancy followed by 13 (21%) were said one time throughout pregnancy, 10 (17%) said three times throughout pregnancy, while only 3 (5%), While 21 (35%) said I don't know, 29 (48%) were said that pregnant women will take three table of IPTp-SP at once followed by 9 (15%) were said two tablet, 1 (2%) said one tablet; While 21 (35%) said I don't know, 30 (50%) were said that pregnant women will take IPTp dose at time 1 - 3 Months of her gestation period followed by 6 (12%) were said 4 - 6 Months, 2 (3%) said 7 - 9 Months, while only 3 (5%), While 21 (35%) said I don't know.

In **Table 4**, The result showed that the majority of the respondents 34 (57%) were said yes while 26 (43%) were said no, 39 (65%) were said Yes while 21 (35%) were said no, 13 (22%) were said It's not good for the baby, followed by 6 (10%) were said It will cause abortion, while only 2 (3%) were said It will cause death of the fetus, 56 (93%) were said Yes while 4 (7%) were said no, 55 (91%) were taking permission from their husbands for the consumption IPTp-SP during their pregnancies, while the rest of respondents 1 (2%) were taking permission from their parents

In **Table 5**, The results demonstrated that the majority of respondents 41 (68%) were said yes while 19 (31%) said no, 27 (45%) were said Mother and child health

Table 4. Attitude characteristics.

| | N = 60 | % |
|---|--------|-----|
| Convinced/Accepted (IPTp-SP) consumption | | |
| Yes | 34 | 57% |
| No | 26 | 43% |
| Usefulness IPTp-SP | | |
| Yes | 39 | 65% |
| No | 21 | 35% |
| Harmful of IPTp-SP | | |
| It's not good for the baby | 13 | 22% |
| It will cause abortion | 6 | 10% |
| It will cause death of the fetus | 2 | 3% |
| Very useful to my baby | 39 | 65% |
| Per mission for of IPTp-SP utilization | | |
| Yes | 56 | 93% |
| No | 4 | 7% |
| Permission for of IPTp-SP utilization | | |
| My Husband | 55 | 91% |
| My parents | 1 | 2% |
| No I don't | 4 | 7% |

Table 5. Practice characteristics.

| | N = 60 | % |
|---|--------|-----|
| ANC Visit | | |
| Yes | 41 | 68% |
| No | 19 | 31% |
| Centers for ANC Visit | | |
| Public Hospital | 12 | 20% |
| Mother and child health center (MCH) | 27 | 45% |
| Private Hospital | 2 | 3% |
| I don't visit | 19 | 32% |
| IPTp-SP tablets | | |
| Yes | 28 | 47% |
| No | 32 | 53% |
| IPTp-SP doses taken during their current pregnancy | | |
| One time | 27 | 45% |
| Two times | 4 | 6% |
| Three time | 1 | 2% |
| I don't taken | 28 | 47% |
| Time of starting IPTp-SP tablet consumption | | |
| 4 - 6 months (13 - 24 Weeks) | 22 | 37% |
| 7 -9 months (25 - 36 weeks) | 10 | 16% |
| Don't taken | 28 | 47% |
| Ways of obtaining IPTp-SP drugs | | |
| Received free at the health facility. | 29 | 48% |
| Bought drug at hospital pharmacy | 2 | 3% |
| Bought drug at commercial pharmacy | 1 | 2% |
| I don't taken | 28 | 47% |
| Method of IPTp-SP tablet consumption (swallowing) | | |
| In the facility under observation by health care providers | 5 | 8% |
| In the facility without observation by healthcare Providers | 2 | 3% |
| At home | 25 | 42% |
| I don't taken | 28 | 47% |
| Reasons of not swallowing IPTp-SP tablet under Observation by health workers | | |
| I was not required to do so | 3 | 5% |
| Lack of clean water | 10 | 17% |

Continued

| | | |
|--|-----------|-------------|
| Lack of clean glasses/utensils | 14 | 23% |
| I was told to have my meal first | 5 | 8% |
| I don't take it | 28 | 47% |
| Reasons of not swallowing IPTp-SP table | | |
| Did not attended ANC | 19 | 32% |
| Health workers was not friendly | 2 | 3% |
| IPTS-SP drugs not offered at ANC center | 6 | 10% |
| Believe that drugs are not useful | 11 | 18% |
| I did not know that I was supposed to take it | 21 | 35% |
| Feared side effects on my baby | 1 | 2% |
| Total | 60 | 100% |

center (MCH), followed by 12 (20%) said public hospitals. while only 2 (3%) said private hospital, 32 (53%) were said no while 28 (47%) were said yes, 27 (45%) were said one time followed by 4 (6%) were said two times, 1 (2%) were said three times, while 28 (47%) were said was not taken IPTp-SP table during my pregnancy, 22 (37%) were said that they started IPTp-SP tablet consumption during the period in 4 - 6 months (13 - 24 Weeks) of their gestational period followed by 10 (16%) were started their IPTp-SP tablet consumption in 7 - 9 months (25 - 36 weeks) of their gestational period, 29 (48%) were said Received free at the health facility., followed by 2 (3%) were said Bought drug at hospital pharmacy. while only 1 (2%) were said Bought drug at commercial pharmacy, 25 (42%) said that they were swallowing IPTp-SP tablet at home, followed by 12 (20%) were said in the facility under observation by health care providers. while only 2 (3%) were said in the facility without observation by health care providers, 14 (23%) were Lack of clean glasses/utensils, followed by 10 (17%) were said Lack of clean water, while only 5 (8%) were said I was told to have my meal first, 21 (32%) were responded I did not know that I was supposed to take it, followed by 19 (32%) Did not attended ANC during their pregnancies, while 6 (10%) were responded that main reason of not taking IPTp-SP tablet was due to not offered the IPTp-SP drugs at ANC center.

4. Discussion, Conclusions and Recommendation

4.1. Discussion

In **Table 2**, the study showed that 35 (58%) were in the 25 - 34 years' age group. A total of 51 (85%) were married, and 24 (40%) were illiterate while 17 (28%) had primary school education. 43 (72%) were housewives while only 11 (18%) were employed.

Other similar studies conducted rural Kenya and North-Eastern Tanzania found the use of IPTp-SP increasing with age, younger age groups generally as-

sociated with low IPTp-SP use [7]. Age however was a non-significant predictor of the use of IPTp-SP in some studies [8].

Education has been inconsistent amongst the studies. It has also been identified by some studies to be a significant predictor of the use of IPTp-SP which found an association between low or no education level and low use of IPTp-SP. [8]. In some studies conducted in Tanzania, Kenya, however, showed education was not shown to be a statistically significant predictor of the use of IPTp-SP [9]. While studies conducted in Uganda showed that the Majority of the participant (90%) were well educated. They had secondary to tertiary education but however, only 40.5% of them took first dose only showing that education level does not determine how women receive malaria prevention [10].

This study showed that 32 (53%) of the respondents were had gravid more than Four times, followed by 19 (32%) who were had three times, 7 (12%).

Studies conducted in north-east Tanzania showed that the number of pregnancies a woman has had, has been identified to be associated with the use of IPTp-SP. Women who have a first pregnancy (single gravidae) have been found to be significantly associated with taking inadequate SP dose [11]. Other studies conducted in Tanzania found gravidity had no significant association with the use of IPTp-SP [12].

This study showed that a total of 39 (65%) were had knowledge towards IPTp while 21 (35%) did not. This study also showed that the majority of the respondents 39 (65%) were get health education awareness on IPTp during their current pregnancy while 21 (35%) did not.

Table 3, total of 25 (42%) were getting health education awareness towards IPTp were from health care providers at health centers while 8 (13%) from Friends/relatives/neighbors, followed by 4 (6%) from their husband. And 34 (57%) were had convenience IPTp-SP tablet consumption at their current pregnancy while 26 (43%) did not.

In some studies conducted in Korogwe District, North-Eastern Tanzania showed that the knowledge about malaria in pregnant women has been found to significantly increase the use of IPTp-SP [13].

A cross-sectional study based on the 2015 Malaria Indicator Survey in Kenya however found no associations between knowledge of malaria and the use of IPTp-SP [14]. Contrary to their finding other studies conducted in Tanzania found that the knowledge about malaria prevention significantly increased the use of IPTp-SP [15]. Another recent study conducted in a rural town in Western Nigeria found that lack of knowledge of adverse consequences of malaria in pregnancy was significantly associated with low use of IPTp-SP [16].

A study conducted in two health facilities in rural Nigeria (2009) showed that 23.9% of the pregnant women who have heard about IPTp were able to give a good definition of IPTp [16].

Similar study conducted in the Bosomtwe district of Ghana' shows that pregnant women's knowledge on the IPT subject is an issue that needs to be ad-

dressed to increase coverage. In order to ensure that pregnant women get the right information on IPT, health care workers need to have proper knowledge such that they transfer that knowledge to the target group appropriately [17].

A study conducted in Korogwe District, North-Eastern Tanzania viewed IPTs-SP as harmful, suggesting that it caused miscarriages and side effect that included mouth sores, fatigue, fever, rashes and itchiness; however these studies suggested that although these perceptions exist, there were very few cases of adverse effects, and that these ideas were based on hearsay rather than personal experience [18].

Knowledge of health care workers has probably contributed to the high knowledge of pregnant women. However it was observed that the health education that is provided in the morning before the clinic starts is not enough, as some clients usually have discomforts of being pregnant and some come late. The outcome of this is difficulties in acceptance of the drug when these pregnant women are issued with SP when they reach the right gestation age of receiving SP. A study conducted in rural Nigeria showed that, despite having heard about IPTp, 44 (40.4%) women were afraid of taking drugs in pregnancy [19].

In a study conducted in Tanzania, majority of the respondents associated low compliance with IPTp to poor acceptance of SP because of perceived association of SP with side effects. In the same study, it was also reported that pregnant women discard drugs after leaving the clinic. Other factors influencing compliance included late enrolment, periodic shortages of drugs and health workers under performance [19].

In **Table 5**, this study revealed that 41 (68%) respondents were had ANC visit while 19 (31%) did not, 27 (45%) of them were attended Mother and child health center (MCH) for their ANC visit. And Overall, 28 (47%) were had used (utilized) IPTp-SP drugs at their current pregnancy, Of the 27 (45%) had taken one dose while 4 (6%) took two doses, 1 (2%) took three doses.

Study conducted in Nigeria found that early booking for ANC, more than two visits to ANC, good knowledge and positive attitude towards IPTp and being employed were factors associated with IPTp-SP utilisation. Respondents' good knowledge on IPTp was further corroborated by FGD findings of SP being the drug of choice with no harmful effect on the pregnant woman and the baby yet unborn. Positive attitude towards IPTp use might be because of the good level of IPTp awareness, which was mostly through the health care provider [20].

According to World Malaria Report (2010), in 2007-2009, the percentage of women who received two doses of treatment during pregnancy ranged from 2.4% in Angola to 62% in Zambia. A study in Benin 2007, on evaluation of the strategies of malaria control during pregnancy showed that 66.6% of the women in the general population had received IPT-SP appropriately (two doses) [20].

This study showed that overall respondents 22 (37%) started IPTp-SP tablet consumption during the period in 4 - 6 months (13 - 24 Weeks), while 10 (16%) started IPTp-SP tablet consumption during in 7 - 9 months (25 - 36 weeks) of their gestational period. In all, 12 (20%) of respondents took their IPTp-SP tablet

under the direct observation of the health care worker at the health facility (DOTs) [14].

Although 71% of all women started ANC after the four gestational months recommended by guidelines, their late attendance was not found to be the main constraint for IPTp delivery since 81% of the women had attended the ANC clinic at the time of the first IPTp delivery and 60% had attended both during the first and the second IPTp delivery period [14].

However, it seemed that women's attendance was rather based on norms and rituals than on their awareness of the benefits of ANC services for their own and their child's health. Late ANC initiation was associated with belonging to the Sukuma ethnic group, multiparity, and late recognition of pregnancy [14].

4.2. Conclusions

As shown in **Table 2**, total number of 60 respondents of pregnant women at 20 weeks to 36 weeks of gestation who attended the antenatal clinic at Benadir hospital wadajir district benadir region Somalia were included this study during from April 2021-July 2021.

A total of 35 (58%) were in the 25 - 34 years' age group. A total of 51 (85%) were married, and 24 (40%) were illiterate while 17 (28%) had primary school education. 43 (72%) were housewives while only 11 (18%) were employed. A total 32 (53%) were had gravid more than Four times, followed by 19 (32%) who were had three times, 7 (12%).

As shown in the **Table 3**; total of 39 (65%) were had knowledge towards IPTp while 21 (35%) did not. A total of 25 (42%) were getting health education awareness towards IPTp were from health care providers at health centers while 8 (13%) from Friends/relatives/neighbors, followed by 4 (6%) from their husband. And 34 (57%) were had convenience IPTp-SP tablet consumption at their current pregnancy while 26 (43%) did not.

Among the study respondents, 41 (68%) were had ANC visit while 19 (31%) did not, 27 (45%) of them were attended Mother and child health center (MCH) for their ANC visit. And Overall, 28 (47%) were had used (utilized) IPTp-SP drugs at their current pregnancy. Of the 27 (45%) had taken one dose while 4 (6%) took two doses, 1 (2%) took three doses.

As shown in the **Table 5**, furthermore 32 (53%) did not used (utilized) IPTp-SP drugs at their current pregnancy of the 21 (32%) were lack of awareness, 19 (32%) were lack ANC attending during their pregnancies, (10%) were lack of IPTp-SP drugs at ANC center and overall when level of education, parity, IPTp awareness, Convenience of IPTp-SP consumption, ANC visit of the respondents were cross tabulated with their IPTp-SP intake (consumption/utilization result showed significant difference was strongly observed ($P = 0.00$).

4.3. Recommendations

The study recommended the flowing:

1) The ministry of health especially health promotion, maternal and reproductive health and national malaria control program should intensify national strategies and policies to ensure 3 doses of IPTp-SP given at antenatal care centers which is targeted 80% coverage of the pregnant women in the target areas and provide capacity building for all health care providers. Continuous sensitization and educate pregnant women on the importance of intermittent preventive treatment during each pregnancy by healthcare workers at community level needs to be increased by provision of standardized improved IEC messages that contain clear and well understood information via mass-media.

2) Also the study recommended further studies on knowledge Attitude and Practice on the utilization of intermittent preventive treatment (IPTs) of malaria in pregnancy should be conducted in Somalia.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] World Health Organization (2004) A Strategic Framework for Malaria Prevention and Control during Pregnancy in the African Region. WHO Regional Office for Africa, Brazzaville. http://www.afro.who.int/sites/default/files/2017-06/malaria_in_pregnancy_092004.pdf
- [2] World Health Organization (2020) World Malaria Report 2020. World Health Organization, Geneva.
- [3] Marchesini, T. and Crawley, J. (2004) Malaria, Iron Deficiency and Anaemia Control. An Update of Roll Back Malaria. World Health Organization, Geneva.
- [4] World Health Organization (2016) World Malaria Report. World Health Organization, Geneva.
- [5] Desai, M., ter Kuile, F.O., Nosten, F., McGready, R., Asamoah, K., Brabin, B., *et al.* (2007) Epidemiology and Burden of Malaria in Pregnancy. *The Lancet Infectious Diseases*, **7**, 93-104. [https://doi.org/10.1016/S1473-3099\(07\)70021-X](https://doi.org/10.1016/S1473-3099(07)70021-X)
- [6] Steketee, R.W., Nahlen, B.L., Parise, M.E. and Menendez, C. (2001) The Burden of Malaria in Pregnancy in Malaria-Endemic Areas. *The American Journal of Tropical Medicine and Hygiene*, **64**, 28-35. <https://doi.org/10.4269/ajtmh.2001.64.28>
- [7] Gikandi, P.W., Noor, A.M., Gitonga, C.W., Ajanga, A.A. and Snow, R.W. (2008) Access and Barriers to Measures Targeted to Prevent Malaria in Pregnancy in Rural Kenya. *Tropical Medicine & International Health*, **13**, 208-217. <https://doi.org/10.1111/j.1365-3156.2007.01992.x>
- [8] Exavery, A., Mbaruku, G., Mbuyita, S., Makemba, A., Kinyonge, I.P., Kweka, H. (2014) Factors Affecting Uptake of Optimal Doses of Sulphadoxine-Pyrimethamine for Intermittent Preventive Treatment of Malaria in Pregnancy in Six Districts of Tanzania. *Malaria Journal*, **13**, Article No. 22. <https://doi.org/10.1186/1475-2875-13-22>
- [9] Choonara, S., Odimegwu, C.O. and Elwange, B.C. (2015) Factors Influencing the Usage of Different Types of Malaria Prevention Methods during Pregnancy in Kenya.

- African Health Sciences*, **15**, 413-419. <https://doi.org/10.4314/ahs.v15i2.14>
- [10] Kibusi, S.M., Kimunai, E. and Hines, C.S. (2015) Predictors for Uptake of Intermittent Preventive Treatment of Malaria in Pregnancy (IPTp) in Tanzania. *BMC Public Health*, **15**, Article No. 540. <https://doi.org/10.1186/s12889-015-1905-0>
- [11] Stephen, A.A., Wurapa, F., Afari, E.A., Sackey, S.O., Malm, K.L. and Nyarko, K.M. (2016) Factors Influencing utilization of Intermittent Preventive Treatment for Pregnancy in the Gushegu District, Ghana, 2013. *The Pan African Medical Journal*, **25**, Article No. 4. <https://doi.org/10.11604/pamj.suppl.2016.25.1.6169>
- [12] Marchant, T., Nathan, R., Jones, C., Mponda, H., Bruce, J., Sedekia, Y., Schellenberg, J., Mshinda, H. and Hanson, K. (2008) Individual, Facility and Policy Level Influences on National Coverage Estimates for Intermittent Preventive Treatment of Malaria in Pregnancy in Tanzania. *Malaria Journal*, **7**, Article No. 260. <https://doi.org/10.1186/1475-2875-7-260>
- [13] Sangaré, L.R., Stergachis, A., Brentlinger, P.E., Richardson, B.A., Staedke, S.G., Kiwuwa, M.S., *et al.* (2010) Determinants of Use of Intermittent Preventive Treatment of Malaria in Pregnancy: Jinja, Uganda. *PLoS ONE*, **5**, e15066. <https://doi.org/10.1371/journal.pone.0015066>
- [14] Chituku, S. (2013) Knowledge of Women of Child Bearing Age on the Utilisation of Intermittent Preventive treatment of Malaria in Pregnancy at Dangamvura and Sakubva Health Centers, Mutare, Zimbabwe. Reg. Number: R128716j, University of Zimbabwe Department of Nursing Sciences College of Health Sciences.
- [15] Adewole, A.O., Fawole, O., Ajayi, I.O., Yusuf, B., Oladimeji, A., Waziri, E., *et al.* (2019) Determinants of Intermittent Preventive Treatment of Malaria among Women Attending Antenatal Clinics in Primary Health Care Centers in Ogbomosho, Oyo State, Nigeria. *The Pan African Medical Journal*, **33**, Article No. 101. <https://doi.org/10.11604/pamj.2019.33.101.14800>
- [16] Anders, K., Marchant, T., Chambo, P., Mapunda, P and Reyburn, H. (2008) Timing of Intermittent Preventive Treatment for Malaria during Pregnancy and the Implications of Current Policy on Early Uptake in North-East Tanzania. *Malaria Journal*, **7**, Article No. 79. <https://doi.org/10.1186/1475-2875-7-79>
- [17] Mutanyi, J.A., Onguru, D.O., Ogolla, S.O. and Adipo, L.B. (2018) Determinants of the Uptake of Intermittent Preventive Treatment of Malaria in Pregnancy with Sulphadoxine Pyrimethamine in Sabatia Sub County, Western Kenya. *BMC Infectious Diseases of Poverty*, **10**, Article No. 106. <https://doi.org/10.1186/s40249-021-00887-4>
- [18] Amoran, O.E., Ariba, A.A. and Iyaniwura, C.A. (2012) Determinants of Intermittent Preventive Treatment of Malaria during Pregnancy (IPTp) Utilization in a Rural Town in Western Nigeria. *Reproductive Health*, **9**, Article No. 12. <https://doi.org/10.1186/1742-4755-9-12>
- [19] Akinleye, S.O., Falade, C.O. and Ikeoluwapo, O.A. (2009) Knowledge and Utilization of Intermittent Preventive Treatment for Malaria among Pregnant Women Attending Antenatal Clinics in Primary Health Care Centers in Rural Southwest, Nigeria: A Cross-Sectional Study. *BMC Pregnancy and Childbirth*, **9**, Article No. 28. <https://doi.org/10.1186/1471-2393-9-28>
- [20] D'Almeida, T., Agboton-Zoumenou, M.-A., Garcia, A., Massougbdji, A. and Cottrell, G. (2011) Field Evaluation of the Intermittent Preventive Treatment of Malaria during Pregnancy (IPTp) in Benin: Evolution of the Coverage Rate since Its Implementation. *Parasite Vectors*, **4**, Article No. 108. <https://doi.org/10.1186/1756-3305-4-108>