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Vitamin A Supplementation Coverage and Associated Factors of Children Aged (6-59) Months in Humbo Town, Wolaita Zone, Southern Ethiopia: Community Based Cross-Sectional Study

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Abstract

Vitamin A is an essential nutrient which is needed in a small amount for human being. It is particularly important for normal functioning of the visual system, of epithelial cells, immune function and reproduction. Infants and children require more vitamin A to grow faster and enable them to prevent infections. Objective is to asses Vitamin A supplementation coverage and associated factors among children of aged (6-59) months in Humbo town administration, Southern Ethiopia. Community-based cross-sectional study was conducted to assess vitamin A supplementation coverage and associated factors among children aged 6-59 months in Humbo town administration, Southern Ethiopia. After data collection, it was checked for completeness and consistency before data entry. Data were coded and entered by using SPSS version 20 for further analysis. Bivariate and multivariable logistic regression models were used to assess the association between the independent variable with vitamin A supplementation coverage. Result: A total of from523 about 511 participants were included with a response rate of 97.7 %. This study shows that maternal education has statically significant variable with vitamin A supplementation coverage AOR= [3.57(1.3-9.84)]. This study also revealed that paternal education has statically significant variable with vitamin A supplementation coverage AOR=[3.6(1.3-10)], [3.72(1.5-9.3)], [3.87(1.5-10)] when comparing educational status of odds of primary completed, secondary completed and more than secondary educated with illiterate . This study as shown that measles vaccination has statically significant with vitamin A supplementation coverage AOR= [3.7(1.9-7.2)]. Conclusion: Based on this study, we conclude that vitamin A supplementation coverage is still low when compared with regional coverage; this study confirms that level of maternal, paternal education and measles vaccination were significantly associated factors.

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Keywords

Vitamin A supplementation coverage, 6-59 months children, Humbo town, SNNPR, Ethiopia.

Introduction

Vitamin A is an essential nutrient which is needed in a small amount for human being, especially for infant and under-five children. It is particularly important for the normal functioning of the visual system, of epithelial cells, immune function and reproduction [1]. Infants and children require more vitamin A to grow faster and enable them to prevent infections [2]. Improvement in vitamin A supplementation also reduces all case-related death by 24% according to WHO[9], diarrhea-related deaths by 40% and measles-related deaths by 50%[6].

Vitamin A supplementation in children 6–59 months of age living in developing countries is related with a diminished chance of all-cause of mortality and a reduced incidence of diarrhea. Vitamin A supplementation may improve gut integrity and therefore decrease the severity of some diarrheal episodes. The role of vitamin A in innate and adaptive immunity may also include reducing susceptibility to and/or severity of other infections. Many countries have integrated strategies to deliver vitamin A supplements to infants and children in their national health policies[13].

But, worldwide more than 10 million children die each year, most deaths are from preventable causes, and nearly all deaths occur in poor countries and Ethiopia ranked sixth in the total number of Under-five child deaths among countries worldwide. Vitamin A deficiency also remains the leading single cause of blindness among children worldwide[7]. Nearly 44-50% of preschool children were affected by severe vitamin A deficiency (VAD). Mortality owing to malnutrition and higher prevalence of VAD among neonates and children below 5 years of age constituted one-third of the global mortality rate. Other estimates showed 1.02 billion people to be severely affected by micronutrient deficiencies globally, vitamin A to be the most deficient nutrient in the body[8].

The World Health Organization (WHO) reported that over two billion people are at high risk of vitamin A with the most severe problems found in developing countries[9]. Black and coworkers analyzed the global burden of disease attributable to nutritional factors for Africa, Asia, and Latin America in children under 5 years of age; they estimated that deficiencies of vitamin A accounted for the greatest burdens, responsible for 0.6 million deaths and childhood disability-adjusted life-years in children[5].

In SSA, 56 million children, 44.4% of all preschoolers, are Vitamin A deficient[11]. Vitamin A deficiency is a leading cause of blindness, morbidity, and mortality among preschool children

in developing countries and has long been recognized as a major public health problem in Ethiopia[7]. According to the 2011 national health survey of SNNPR of Ethiopia, only 35% of children consume foods rich in vitamin A and only 44% of children 6-59 months were able to access full vitamin A supplementation coverage[12].

Despite the fact that vitamin A deficiency and under-five diarrhea, measles infection and other childhood disease has direct and indirect association, and its deficiency causes serious consequences ,but less attention was given to tackle the existing problem and still now under five diarrhea is one of top five reportable disease in Humbo town administration, it might be due to low coverage of vitamin A supplementation.. Adequate vitamin A supplementation can reduce the risk of diarrheal related death by 40% and measles related death by 50%[6]. Few studies were done on VAS and associated factors of children 6-59months in Wolaita Zone, Southern Ethiopia [11, 12]. Humbo town administration is also one of vitamin A deficient town in Wolaita zone. But, there has been no study addressed on under-five vitamin A supplementation in Humbo town. So, it is crucial to assess vitamin A status in the district. Therefore, this study is intended to assess vitamin A supplementation coverage and related factors among 6-59months children in Humbo town administration, Southern Ethiopia.

Materials and Methods

Study setting

The study area is Humbo town administration, Wolaita Zone, Southern Nations, Nationalities and Peoples Regional State (SNNPRS) of Ethiopia. It is located 360 km away from the country capital Southwest of Addis Ababa and 174 km away from the Northeast of the capital city of the region Hawassa. It shares a boundary within the Eastern Ambe Shoya Keble, in the North with Guttuto Larena Keble, in the South with Abela Sifa Keble and in the West part Ampo Koysha Keble. The town administration lies between the latitude of 6^0 42' 03"N and longitude of 37^0 46' 23"E. The altitude of town administration ranges between 1000-1600 m.a.s.l. Humbo town administration has a population of 21140, from these under five populations are 2890 and 6-59 months are 2580. The town administration has one health center and two health posts, most of the population in town administration are merchants, government employers and some of the agricultural activities are practiced.

Study design and period

A community-based cross-sectional study was conducted to asses VAS coverage and associated factors among children 6-59 months in Humbo town administration, Southern Ethiopia.
The study was conducted from April 1 to May 30, 2019.

Source population

The source population is households with caregivers of at least one child of 6-59 months living in town administration.

Study population

The study population is households with caregivers of at least one child 6-59 months selected for the study.

Study unit

At least one child of 6-59 months with Caregivers/mothers selected for the study.

Inclusion and exclusion criteria

Inclusion criteria

Mothers or caregivers with children of aged 6–59 months, who have been living up to 6 months in the study area were included in the study.

Exclusion criteria

The caregivers of children 6-59 months who were severely sick and unable to respond during data collection were excluded from the study.

Sample size and Sampling technique

Sample size determination

The target populations under the study were children in the age group of 6–59 months. To estimate the sample size, the desired confidence interval is taken to be 95% (z = 1.96). The desired level of precision of the estimates is ± 5% (d = 0.05). Considering the anticipated population proportion of Boloso Sore Woreda is 83.1% (p=0.831)[15] and taking design effect (de) =2, the following sample size formula is used(single population proportion formula).

Using this formula, the total sample size comes out to be 432, and considering the 10% non-response rate, the sample size of 475 is reached.

$$n = \frac{(Z_{\alpha/2})^2 * p(1-p)\,de}{d^2}$$

(n + n*10% non response rate)=Total sample size.

For the second objective, the sample size was calculated by using Epi info version 7 sample size calculation for the double population proportion. By using the following assumptions OR (95% CI) and power of study with 80% is used to calculate sample size, a ratio of exposed to unexposed (1:1).In different literature immunization status (fully immunized) [3] and paternal education[14] were known significant factors. Accordingly, the total sample size estimated for the factor paternal education was 523 and for immunization status 427.

When comparing the sample size calculated based on the above information and formula the following figures come out to be 427, 475 and 523.

But as a principle, the largest sample size recommended to survey to reduce random error, so in our sample size to be 523.

Sampling technique

A total of 523 households with at least one child from the age of 6-59 months were selected by using a two-stage cluster sampling method. The primary sampling unit was a list of Keble and ketena/clusters in the town administration. The town administration organized with two Kebles and within two Kebles there are nine ketena, from each ketena sample of households with 6-59 months were selected by using population proportion to size .The second sampling unit was a list of the households which contains at least one 6-59 month child with caregiver in the ketena/cluster. Which were allocated by using systematic sampling interval (N/n) determined by dividing total households which contains 6-59months children with caregivers in each ketena over a proportionate assigned sample to that ketena/cluster, which gives the values of (k). The first household was selected by choosing one number out of sampling intervals randomly and every K^{th} values were added until the required sample size achieved. The direction to start the first household was randomly selected and in the event where there are two children 6-59 months in the selected households, the younger one was selected as index child to minimize recall bias.

Data collection procedure

Data were collected by using face to face interviews of caregivers/mothers with children 6-59months. The tools were modified and adapted from EDHs and different literatures. It was developed using the sequence of a

structured questionnaire. Home to home visit was done to collect the data. Data were collected by a trained health professionals that are fluent speaking Amharic. One health officer and one degree nurse were involved as a supervisor and eight diploma nurses included as a data collectors. Data were collected from April 1 to May 30, 2019.

Data quality control

The questionnaire was translated from English to Amharic and back to English by a fluent speaker on two languages. 5% of the questionnaire was pre-tested before the actual data collection period and it was done out of actual study area to check the accuracy of the questionnaire and consistency, the correction was taken based on the response of pre-test. Training was given for one day for both supervisors and data collectors on the purpose of study, how to handle questionnaires, how to conduct data collection and ethical consideration. Strict supervision was done by supervisors and the overall quality of data collection was monitored by the principal investigator. The data were submitted from collectors to supervisor daily, when there was an error on data, necessary correction was given as soon as.

Variables

Dependent variable

Vitamin A supplementation coverage

Independent variables

Socio-demographic characteristics
Other factors
Index child character
Knowledge and awareness/attitudes of vitamin A supplementation

Operational definition

Vitamin A supplementation coverage

The percentage of children aged 6-59 months received one supplement of vitamin A in the previous 6 months.

Caregiver

Primarily biological mother/father and sometimes who gives care for the child.

Knowledge

Experience or information of vitamin A supplementation that can be communicated or shared among caregivers and mainly will be determined by three questions in this study.

Attitudes of a caregiver toward health extension worker- opinion or perception of caregiver on health extension worker and measured by using Likert scale of measurement

(Strongly disagree, Disagree, Undecided, Agree and strongly agree) and after data collection which was categorized into three groups strongly disagree + disagree= considering negative attitude, strongly agree + agree= considering positive attitude and undecided= considering neutral /neither positive or negative attitude and at the end of by running frequency measured [16].

Data processing and analysis

After data were collected it was checked for completeness and consistency before entry. Data were coded and entered into Epi data version 3.01 and exported to SPSS version 20 for further analysis. The data were cleaned using SPSS by running frequency and descriptive statistics.

The multivariable logistic regression model was used to assess the association between independent variables with vitamin A supplementation coverage. For those variables with p values of less than 0.25 by bivariate regression analysis was used to control potential confounders and those variables of p-values were less than 0.25 were a candidate for multivariable analysis. During multivariable analysis adjusted odds ratio with 95% CI was estimated to identify the associated factors and an independent variable with a p-value less than 0.05 is considered as a statistically significant and independent predictor of vitamin A supplementation coverage.

Ethical considerations

The data collection was carried out after approval of the ethical review committee of the college of health sciences and medicine of Wolaita Sodo University. The letter was taken from Wolaita Sodo University to Humbo town administration health office to precede the study and an additional letter was taken from Humbo town administration health office and Keble leaders.

The study was conducted based on a voluntary participants of the study subject after explaining the purpose of the study and informed consent was obtained from each study participant. The data collection was used by the Amharic language after explaining their willingness to participate in the study freely. Anyone has the right to withdraw from the study at any time if not voluntary, and no need of mentioning the name of the participant rather than only code was used during the interview. Confidentiality of information was maintained and not shared with anybody out of the proposed study.

Results and Discussions

Socio-demographic characteristics of the participants

A total of from 523 about 511 participants were included with a response rate of 97.7 %. Among caregivers of the children, 93.2% were biological mothers and 6.8% were other than biological mothers. In this study the mean age of caregiver was 29 years and 26 months for children, the highest age category for children were 12-23, which accounts 171(33.5%) and sex of children were 306(59.9%) males and 205(40.1%) were females. The majority of caregivers were married 493(96.5%). The majority of study participants were protestant 448(87.7%) followed by Orthodox 63(12.3%), the highest number of study participants were Wolaita 484(94.7%) followed by Amhara 25(4.9%). Regarding, maternal education 172(33.7%) were illiterate and 175(34.2%) were completed secondary education.

Other factors

The maximum number of Vitamin A supplementation occurs during routine immunization 177(34.6%) and the reason for not taking of vitamin A accounts maximum number is a distance far apart from resident area133(26%). Regarding, the source of information, almost all of the respondents as said from health extension workers 479 (93.7%).

Knowledge, attitudes and awareness of vitamin a supplementation

According to this data 159(31.1) of mothers had good knowledge where as 352(68.9%) had poor knowledge. Attitudes of caregivers on health extension workers/health center workers 29(5.7%) have a negative attitude 244 (47.7%) have a positive attitude and 238(46.6%)were abstain from saying anything. Among caregivers 501 (98%) abele to identify vitamin A capsule from other drugs, 313(61.3%) able to mention at least two natural sources of vitamin A and 159(31.1%) able to mention at least two medical effects of Vitamin A deficiency.

Vitamin A supplementation coverage and associated factors of children 6-59 months

This study as shown that vitamin A supplementation coverage of 6-59 months children in Humbo Town is 70.1%

This study revealed that those of mothers who are taught more than secondary school have 3.57 times more likely supplement vitamin A to their children when comparing to those who are uneducated (unable to write and read) AOR= [3.57(1.3-9.84)].

This study also revealed that paternal education has strong association with vitamin A supplementation, it shows that those of father whose education level of primary completed(1-8) has 3.6 times more likely supplement vitamin A to their children when comparing to those of fathers with uneducated AOR= [3.6(1.3-10)],those fathers of education level of secondary completed(9-12) has 3.72 times more likely to supplement vitamin A when comparing with illiterate fathers AOR=[3.72(1.5-9.3)] and those fathers their educational level is more than secondary 3.87 times more supplement vitamin A to their children relatively with illiterate fathers AOR=[3.87(1.5-10)].

This study indicates that the children measles vaccination status has a strong association with vitamin A supplementation. Children who took measles vaccination have 3.7 times more likely to supplement vitamin A when compared with children who are not taking measles vaccination AOR= [3.7(1.9-7.2)].

This study mainly emphasized on vitamin A supplementation coverage and factors affecting the vitamin A supplementation among children aged 6-59months in Humbo town administration Southern Ethiopia. Vitamin A supplementation coverage of 6-59months aged children of Humbo town administration was (70.1%), this coverage is much higher than research conducted in Kenya, which was 52%, the main reason for the high coverage of this study than Kenya might be the number of study participants of the educational status of the caregiver of this study is higher than the educational status of the caregiver of Kenya[10].

Table.1 Socio-demographic characteristics of the participants in Humbo town administration, Wolaita Zone, Southern Ethiopia (N =511)

Variables	Category	Frequency (%)
Age of caregiver	15-19	11(2.1)
	20-29	265(51.9)
	>=30	235(46)
sex of caregiver	Male	39(7.6)
	Female	472(92.4)
Marital status	Ever married	493(96.5)
	Not married	18(3.5)
R/ship of respondents to child	Biological mother	476(93.2)
	Other	35(6.8)
Religion	Protestant	448(87.7)
	Orthodox	63(12.3)
Ethnicity	Wolaita	484(94.7)
	Gamo	25(4.9)
	Amhara	2(0.2)
Maternal education	**Illiterate**	**172(33.7)**
	Able to write& read	**11(2.2)**
	Primary completed(1-8)	**112(21.9)**
	Secondary completed(9-12)	**175(34.2)**
	More than Secondary	**41(8)**
Average monthly income	500-1000	127(24.9)
	1000-2000	115(22.5)
	>2000	268(52.4)
Occupation of care-giver	Housewife	205(40.1)
	Government employer	89(17.4)
	Merchant	138(27)
	Labor worker	56(14)
	Farmer	23(4.5)
Child sex	Male	306(59.9)
	Female	205(40.1)
Child age	6-11	57(11.2)
	12-23	171(33.5)
	24-35	157(30.7)
	36-47	78(15.3)
	48-59	48(9.4)
Birth order of index child	First	148(29)
	Second	143(28)
	Third	106(20.7)
	Fourth	114(22.3)
Measles vaccination	Yes	447(87.5)
	No	64(12.5)
Child sickness	Yes	168(32.9)
	No	343(67.1)

Table.2 Other factors in Humbo town administration, Wolaita Zone, Southern Ethiopia (N =511)

Modality of VA supplementation	**During(EOS)**	**77(15.3)**
	During VA campaign	**82(16)**
	The child was sick and take	**13(2.5)**
	health institution	**177(34.6)**
	Routine immunization	**9(1.8)**
	Home to a home visit	**1(.2)**
	During measles vaccine	**4(.8)**
Reason for not taking VA	**Child was sick**	**8(1.8)**
	The child was out of home	**2(.4)**
	Fear of drug	**6(1.2)**
	Cultural reason	**133(26)**
	Due to far distance	**397(77.7)**
Distance	**<30minute**	**45(8.8)**
	30-60minute	**69(13.5)**
	60-120minute	**479(93.7)**
Source of information	**From HEW**	**13(2.5)**
	Television	**19(3.7)**
	Other	

Table.3 Knowledge, attitudes and awareness of vitamin A supplementation in Humbo town administration, Wolaita Zone, Southern Ethiopia (N =511)

Attitude	**Negative attitude**	**29(5.7)**
	Positive attitude	**244(47.7)**
	Neutral	**238(46.6)**
Knowledge	Poor knowledge	352(68.9)
	Good knowledge	159(31.1)
Identification VA capsule from other drugs	Able to identified	501(98)
	Unable to identify	10(2)
Mention two natural sources of VA	Able to mention	313(61.3)
	Not able to mention	198(38.7)
Mention two VA deficiency symptoms	Able to mention	159(31.1)
	Not able to mention	352(68.9)
Needs of VA	Normal growth	7(1.4)
	Prevent disease	77(15)
	Prevent death	10(2)
	It helps all above	417(81.6

Table.4 Bivariate and Multivariable regression of factors associated with vitamin A supplementation coverage of children 6-59 months in Humbo town administration, Wolaita Zone, Southern Ethiopia(N =511)

Variables	Category	Coverage of vit A		OR 95% of CI	
		Yes(n=358)	NO(n=153)	COR(95% CI)	AOR(95% CI)
Occupation	Housewife	142(69.3)	63(30.7)	1	1
	G/employer	63(70.8)	26(29.2)	1.07(.624-1.85)	0.795(.39-1.62)
	Merchant	104(75.4)	34(24.6)	1.36(.833-2.21)	1.13(.66-1.93)
	Labor worker	35(62.5)	21(37.5)	0.739(.399-1.37)	0.821(.406-1.66)
	farmer	14(60.9)	9(30.1)	0.69(.284-1.67)	0.821(.305-2.213)
Age of care giver	5-19 years	7(63.6)	4(36.4)	1	1
	20-29 years	196(74)	69(26)	1.63(.461-5.7)	1.32(.319-5.5)
	>=30years	155(66)	80(34)	1.1(.315-3.89)	0.968(.23-4)
Maternal education	Illiterate	108(62.8)	64(37.2)	1	1
	Able to write and read	7(63.8)	4(36.2)	1.037(.292-3.68)	1.37(.349-5.4)
	Primary completed	83(74.1)	29(25.9)	1.7(1.005-2.86)	1.7(.935-5.4)
	Secondary completed	126(72)	49(28)	1.53(.969-2.39)	1.44(.858-2.4)
	More than secondary	34(82.9)	7(17.1)	2.87(1.2-6.87)	3.57(1.3-9.84)*
Paternal education	Illiterate	10(40)	15(60)	1	1
	Able to write and read	13(50)	13(50)	1.5(.495-4.55)	1.7(.51-5.7)
	Primary completed	52(70.3)	22(29.7)	3.54(1.38-9.1)	**3.6(1.3-10)***
	Secondary completed	149(73)	55(27)	4(1.72-9.6)	**3.72(1.5-9.3)***
	More than secondary	134(73.6)	48(26.4)	4.18(1.76-9.94)	**3.87(1.5-10)***
Child sickness	Yes	110(65.5)	58(34.5)	0.7(.45-1.1)	1.37(.926-2)
	No	248(72.3)	95(27.7)	1	1
Measles vaccination	Yes	332(74.3)	115(25.7)	4.22(2.45-7.25)	**3.7(1.9-7.2)***
	No	26(40.6)	38(59.4)	1	**1**
Sex of caregiver	Male	22(56.4)	17(43.6)	1	1
	Female	336(71.2)	136(28.8)	1.9(.983-3.7)	1.6(.737-3.44)
Child age	6-11month	37(64.9)	20(35.1)	1.11(.5-2.46)	1.93(.757-4.94)
	12-23month	117(68.4)	54(31.6)	1.3(.667-2.53)	1.26(.593-2.7)
	24-35month	122(77.7)	35(22.3)	2(1.04-4.2)	2(.931-4.4)
	36-47month	52(66.7)	26(33.3)	1.2(.567-2.54)	1.1(.486-2.54)
	48-59month	30(62.5)	18(37.5)	1	1

Table.5 Multivariable logistic regression model of vitamin A supplementation coverage and associated factors of children 6-59 months in Humbo town administration, Wolaita Zone , Southern Ethiopia(N=511)

Variable		Coverage of Vit A		OR(95% of CI)		P-Value
		Yes (n=358)	No(n=153)	COR (95% of CI)	AOR (95% of CI)	
Maternal education	Illiterate	108(62.8)	64(37.2)	**1**	**1**	
	Able to write and read	7(63.8)	4(36.2)	1.037(.292-3.68)	1.37(.349-5.4)	
	Primary completed	83(74.1)	29(25.9)	1.7(1.005-2.86)	1.7(.935-5.4)	
	Secondary completed	126(72)	49(28)	1.53(.969-2.39)	1.44(.858-2.4)	0.014
	More than secondary	34(82.9)	7(17.1)	2.87(1.2-6.87)	**3.57(1.3-9.84)***	
paternal education	Illiterate	10(40)	15(60)	1	1	
	Able to write and read	13(50)	13(50)	1.5(.495-4.55)	1.7(.51-5.7)	
	Primary completed	52(70.3)	22(29.7)	3.54(1.38-9.1)	**3.6(1.3-10)***	**0.014** **0.005**
	Secondary completed	149(73)	55(27)	4(1.72-9.6)	**3.72(1.5-9.3)***	**0.006**
	More than secondary	134(73.6)	48(26.4)	4.18(1.76-9.94)	**3.87(1.5-10)***	
Measles vaccination	Yes	332(74.3)	115(25.7)	4.22(2.45-7.25)	**3.7(1.9-7.2)***	**0.001**
	No	26(40.6)	38(59.4)	1	1	

The coverage of another study conducted in sub-Saharan Africa revealed that 56.3%, which is slightly greater than Kenya and still much less than this study finding[11]. Another similar study conducted in Ghana shows that 64.3% of under-five children received vitamin A capsule, which is greater than research conducted in sub-Saharan Africa and Kenya, but less than from these studies, this is may be due to improvements in vitamin A supplementation modality by stakeholders[2]. Even if this finding is greater than the above-mentioned country, which is less than research conducted in Wolaita Zone Boloso Sore Woreda, it's coverage is 83.1% ,this is might be the researcher used secondary data from health extension and health office and which has data credibility issue since it is retrospective cohort study[15].

The national vitamin A supplementation coverage of Ethiopia of age category from 12-59 months was 46.8%, which is nearly similar to the southern nation's nationalities of peoples of Ethiopia, but much less than this study finding , the low coverage might be the age category of 6-11 was not included in the national study [7], but which is nearly similar to EDHS,2016, it's coverage was 45%[17]. According to UNICEF data reports of vitamin A supplementation coverage was 68 %, this coverage was extracted from different countries' data and which is nearly complementary to this study finding[4] . The same study on Nigeria conducted shows that coverage of national vitamin A supplementation was 41.1% which is much less than the above all studies and also less than this study [1]. This finding is encouraging and consistent with the results of WHO recommendation which is 70%.

The study also indicates that the higher level of maternal education, the higher knowledge/awareness of vitamin A supplementation and also increase vitamin A supplementation status. Similar study conducted in Nigeria shows that odds of 1.32 times secondary and more than secondary educated mothers more likely supplement vitamin A to their children when comparing to none educated mothers , which is complementary to

this study finding ,also this study shows that those of mothers who are educated more than secondary have 3.57times more likely supplement vitamin A to their children when comparing to those who are illiterate AOR= [3.57(1.3-9.84)][1]. Another study conducted at the national level of Ethiopia state that lower maternal education has a strong association with vitamin A supplementation, which means that lower maternal education, the lower vitamin A supplementation status[7]. Another study in Ghana indicates that mothers with secondary education were 6% more probable to have utilized vitamin A supplementation for their children when comparing to their uneducated counterparts, it means that educated mothers are well placed to understand and comprehend the importance of vitamin A supplementation to their child health as compared with the uneducated mothers, which is similarly complemented to this study[18].

This study revealed that paternal education has strong association with vitamin A supplementation, it shows that those of fathers whose educational level of primary completed(1-8) have 3.6times more likely supplement vitamin A to their children when comparing to those of fathers with illiterate AOR= [3.6(1.3-10)],those fathers of educational level of secondary completed(9-12) has 3.72times more likely supplement vitamin A when comparing with illiterate fathers AOR=[3.72(1.5-9.3)] and those fathers educational level is more than secondary 3.87 times more supplement vitamin A to their child relatively with illiterate fathers AOR=[3.87(1.5-10)]. National coverage of vitamin A program in Ethiopia also confirms that the paternal level of education was significantly associated with vitamin A supplementation, which is consistent with this study[7]. The study conducted in Nigeria also states that the level of paternal education is high; also vitamin A supplementation is high, which has a direct association. So, levels of education were the major determinants of under-five Vitamin A supplementation and coverage increased proportionally to the level of education indicating the importance of health education[1].

The current study revealed that the child measles vaccination status has a strong association with vitamin A supplementation. Children who took measles vaccination have 3.7times more likely to supplement vitamin A when compared with children who are not took measles vaccination AOR= [3.7(1.9-7.2)]. Similar study in Nigeria shows that measles vaccination and vitamin A supplementation don't have association after multivariable analysis but it has an association in bivariate analysis and which contradicts this study[14]. Conclusion and recommendation are as follows:

Based on this study, we conclude that vitamin A supplementation coverage is still low when compared with regional coverage and those of children family who are well educated can supplement vitamin A to their child better than from those of children family less educated and the probability of vaccinated children vitamin A supplementation is high when comparing to not vaccinated children, which mean that if not vaccinated some of the children miss vitamin A supplementation.

Recommendations

According to the findings, the following recommendations are forwarded to Humbo town administration health office, NGO and stalk holders:-

Health education should be given to caregivers
Encourage expanded outreach distribution of vitamin A supplementation.
Should work on maternal knowledge of symptoms of vitamin A deficiency and natural sources of vitamin A.
Should encourage home to home vitamin A distribution
Should work on maternal and paternal level of education.

Limitation of this study

Recall bias by a caregiver
Social desirability bias

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