

(RESEARCH ARTICLE)



# Relationship between caregivers' individual factors and home management of diarrhea among caregivers of children below five years in Ngandu location in Nyeri County.

Leah Wambui GATHOGO \* and Mary Wanjiru WACHIRA

*Deedan Kimathi University of Technology, School of Health Sciences, Department of Nursing P.O. Box Private Bag Kimathi, Nyeri.*

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## Abstract

**Background:** To prevent dehydration and malnutrition in children with diarrhea, it is important they get good management at home. The caregivers should commence home remedies immediately before they seek medical advice. This study assessed the level of knowledge on home management of diarrhea among caregivers of children below five years.

**Methods:** This research applied descriptive cross sectional study design. The current study was a household survey targeting caregivers of children below five years with diarrhea. The Cochran's Sample Size Formula was used to calculate a sample size of 345 respondents. Purposive sampling was used to recruit respondents in the study. The study employed a researcher- administered semi-structured questionnaire. Descriptive statistics and chi-square tests were used in the analysis.

**Results:** The study found that that slightly above half 52.2% (n=180) of the respondents had low knowledge on management of diarrhea. There was a significant relationship ( $\chi^2 = 4.044$ ,  $df = 1$ ,  $p < 0.044$ ) between respondent's' level of education and knowledge of home management of diarrhea. Cross tabulation showed that 60.2% of those who had low education also had low knowledge.

**Conclusion:** The study concluded that the level of knowledge on home management of diarrhea among caregivers of children below five years with diarrhea was low. Level of education was a significant predictor of knowledge whereby low knowledge was associated with low education. The study recommends enhanced training of mothers on home management of diarrhea by nurses.

**Keywords:** Diarrhea; Home Management of Diarrhea; Caregivers' individual factors and home management of diarrhea.

## 1 Introduction

Diarrhea is defined as when a child passes three or more loose or liquid stools within 24 hours, and this may be passed more regular than what normally the child does [1]. Symptoms related to diarrhea include loose and watery stools, and it may be accompanied by other symptoms, including abdominal pain and cramps, weight loss and fever. Passage of loose stools has been big health issue and this indicates signs and symptoms of bowels infection. Diarrhea can be predisposed by several causative agents including viruses, bacteria, and parasites. Passage of loose watery stools in children below five years can be caused by *Rotavirus*. Other risk factors include poor personal hygiene, when food is

\* Corresponding author: Leah Wambui GATHOGO

prepared in unclean environment or stored in unhygienic conditions and use of unclean domestic water, which may get contamination during storage or handling [2]. Diarrhea remains the major contributing factor to childhood illness and death in children below five years in third world nations. In both third world countries and developed nations the cause of diarrhea in children remains multifactorial ranging from infectious causes, unhygienic practices to poor nutritional and dietary habits [3].

In the world, it is estimated that about 40 per cent of all child's deaths who are less than five years are related to pneumonia and diarrhea problems. In Sub-Saharan Africa, diarrhea disease remains the second cause of morbidity and mortality of children [4]. Diarrhea disease accounted for 4.6 billion cases and 1.16 million deaths in Africa in the year 2014 of which more than 50% were from low income countries and most of the cases were children under 5 years [5]. Generally, acute respiratory conditions, diarrhea, malaria, inflammation of the meninges opportunistic infections and measles are the leading causes of loss of lives in under five children [6]. In Kenya, diarrhea is a community health concern since it is leading to many loss of lives among the young children. Every year around 73,700 children below the age of five pass away due to diarrhea disease compared to the pneumonia related cases ranging up to 920,000 deaths [7].

In 2016, up to 11,000 deaths occurred due to pneumonia, followed by diarrhea disease cases. In Kenya, this is around 20% of all the reported deaths cases among less than five years' children [8].

Home based cure is the right approach in management of passage of stools that are very loose and frequent. This is due to the fact that diarrhea will start when the child is at home, the child will be taken to the hospital for treatment and even after going back home the very loose and frequent motions may persist [9]. To prevent dehydration and malnutrition from occurring it is important that children get good management at home. The caregivers who are well informed on home remedies should commence it immediately even before they seek any medical advice. The "early home remedies" given will prevent dehydration and nutritional problems from occurring. For the children with episodes of diarrhea, the care givers are encouraged to continue feeding them as usual and also give extra fluids. By performing these practices dehydration will be prevented and there will be a reduction in the adverse effects of diarrhea on the nutritional status of the young one. Study notes that increased fluid intake with continued feeding is one of the indicators of appropriate management to decrease childhood death due to diarrheal disease since the 1980s [10].

Information and practices of the guardians on the home remedies of diarrhea is a key element in the management of diarrhea in a child so as to intervene early and thereby avoiding complications. The knowledge and practices of on the early interventions of passage very loose and frequent stools motions at home is important in the prevention of diarrhea related complications [11]. The caregivers' primary information about diarrhea is influenced by various factors for example the level of education, other exposures in diarrhea management and also the caretaker's background [12].

Despite the health worker's efforts to educate mothers and caregivers on prevention and management of diarrhea and on improving quality of life for children attending paediatric outpatient clinic (POPC) and Integrated Management of Childhood Illness (IMCI) programs, at Karatina Sub- County Hospital (KSCH) there has been increasing trends in the number of children presenting in the clinics with diarrhea and related complications including dehydration. Similarly, there has been increase in number of children who were brought to the health facility after complications of diarrhea due to delayed seeking of health care services. The reports from routine program monitoring suggest that more than 75% of children admitted for treatment in the facility present with diarrhea and most of them have severe dehydration. Between the months of August and October 2018, seventy-three children were admitted with severe dehydration. The data shows that majority of these cases are from Ngandu location in Kirimukuyu Ward. This is a clear indication that the care provided at home prior to hospital presentation is inappropriate as the state of a child with acute diarrhea at first presentation to a health facility is highly dependent on the care provided at home.

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## 2 Methodology

This research applied descriptive cross sectional study design. The study involved quantitative techniques of data collection and analysis. This research was conducted at Ngandu Location. This is a rural settlement located in Kirimukuyu division, Mathira west Sub -County in Nyeri County. The current study was a household survey targeting mothers of children below five years with diarrhea. Sampling frame was 3414 which is the estimated total population for under five children in Ngandu location as per the Mathira West Sub-county health offices. The Cochran's Sample Size Formula was used to calculate a sample size of 384. Since the total population is less than 10,000, a finite correction formula was applied to arrive at a sample of 345 respondents. Purposive sampling technique was used to recruit respondents in the study. The study included Caregivers of children with diarrhea who were below five years, caregivers aged 18 years and above and those who provided informed consent. Exclusion criteria of the study were caregivers with

children below five years who were mentally ill and those who failed to provide informed consent. The study employed the use of a researcher- administered semi-structured questionnaire. Knowledge was established by looking into the information the caregivers have on diarrhea, home management and nutrition and feeding. Knowledge was assessed by a series of 13 questions. Respondents who had correct answers in 5 or more of the indicators of knowledge were classified as having “high” knowledge while those who got 4 or less correct less were classified as having “low” knowledge. The study period was from August 2019 to December, 2019. Collected data was checked for errors of omission or commission and then entered into a computer using SPSS Version 23 software. Descriptive statistics and chi-square tests were employed in analysis.

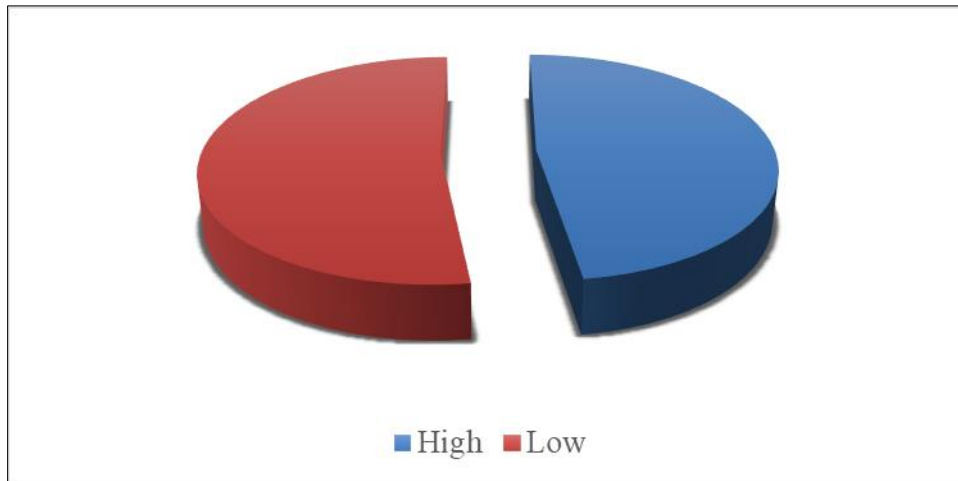
### 3 Results

Results showed that the vast majority 90.2% (n=311) of respondents were aged below 40 years whereby 41.2% (n=142) were aged between 21 and 30 years while 39.1% (n=135) were aged between 31 and 40 years. On marital status, the findings showed that majority 62.9% (n=217) were married. On education, findings showed that slightly above half 50.4% (n=174) of the respondents had acquired secondary education while 27% (n=93%) had acquired primary education as their highest level of education. On occupation, the findings showed that slightly less than half 47.2% (n=163) of the respondents were self-employed, 18.8% (n=65) were farmers and 16.2% (n=56) were in white-collar jobs. (Table 1).

**Table 1** Socio-Demographic Characteristics of Respondents

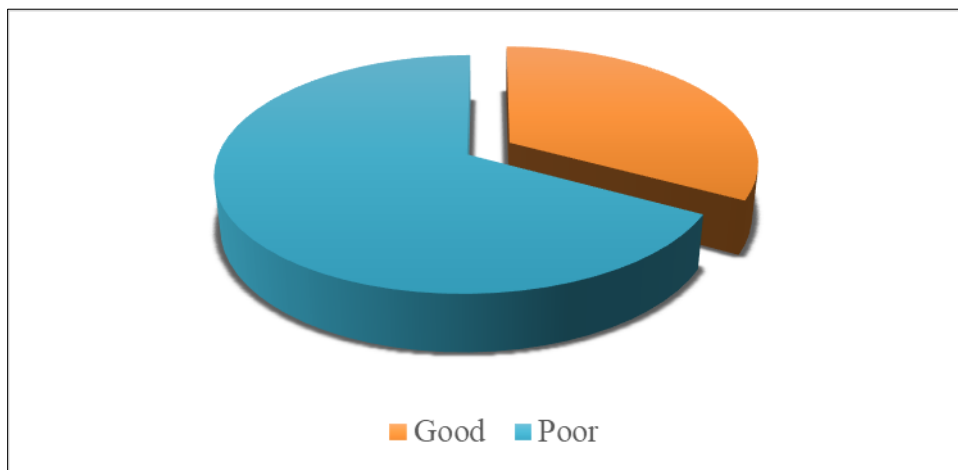
Characteristic	Category	Frequency (n=345)	Percent (%)
Age (years)	<20	34	9.9
	21-30	142	41.2
	31-40	135	39.1
	>41	34	9.9
Marital status	Single	95	27.5
	Married	217	62.9
	Divorced/separated	33	9.6
Education	None	14	4.1
	Primary	93	27.0
	Secondary	174	50.4
	College	59	17.1
	University	5	1.4
Occupation	Farming	65	18.8
	Housewife	44	12.8
	Self-employed	163	47.2
	Full-time employed	56	16.2
	Others	17	4.9

Respondents who had correct answers in 5 or more of the indicators of knowledge were classified as having “high” knowledge while those who got 4 or less correct responses were classified as having “low” knowledge. Findings in Figure 1 showed that slightly above half 52.2% (n=180) had low knowledge on management of diarrhoea.



**Figure 1** Summary of Respondents' Knowledge

Respondents who observed 5-7 of the recommended home management of diarrhoea practices were classified as having “good” practices while those who observed 4 or less of the recommended home management of diarrhoea practices were classified as having “poor” practices. Findings in Figure 2 shows that 67.1% (n=231) of the respondents had poor practices in regards to home management of diarrhoea.



**Figure 2** Summary of Practices of Home Management of Diarrhoea

Chi-square tests were conducted between individual factors comprising the age, level of education, marital status and socio-economic status and knowledge of home management of diarrhea. Results showed that there was a significant relationship ( $\chi^2 = 4.044$ ,  $df = 1$ ,  $p < 0.044$ ) between respondent's level of education and knowledge of home management of diarrhea. Cross tabulation showed that 60.2% of those who had low education also had low knowledge.

**Table 2** Chi-Square Results between Individual Factors and Knowledge

Variable	Chi-square ( $\chi^2$ )	Degrees of freedom (df)	Significance (p)
Age	0.810	1	0.368
Level of education	4.044	1	0.044***
Marital status	0.523	1	0.469
Socio-economic status	1.222	1	0.269

\*\*\*Significant at 95% CI

Chi-square tests were conducted between individual factors comprising the age, level of education, marital status socio-economic status and knowledge and practice of home management of diarrhoea. Results in Table 4.11 show that there was an association ( $\chi^2 = 7.340$ ,  $df = 1$ ,  $p < 0.001$ ,  $OR = 2.4$ ) between respondent's age and practice of home management of diarrhoea. Cross tabulation showed that 73.8% of respondents who were classified as old (40 years and above) had poor practice.

There was also a significant relationship ( $\chi^2 = 62.413$ ,  $df = 1$ ,  $p < 0.001$ ,  $OR = 3.4$ ) between caregiver's knowledge and practice of home management of diarrhoea. Caregivers who had high knowledge were 3.4 more likely to have proper home management of diarrhoea practices. Respondents' level of education, marital status and socio-economic status showed no significant association with practice of home management of diarrhoea as shown in Table 3

**Table 3** Chi-square results between individual factors and practice

		Practice			Chi-square
		Poor	Good	Total	
Age	Young	106	70	176	$\chi^2 = 7.340$ $df = 1$ $p = 0.007$ $OR = 2.410$
	Old	125	44	169	
Marital status	Married	114	103	217	$\chi^2 = 0.002$ $df = 1$ $p = 0.965$ $OR = 0.870$
	Unmarried	117	11	128	
Education	Low	181	100	281	$\chi^2 = 2.428$ $df = 1$ $p = 0.119$ $OR = 1.021$
	High	50	14	64	
Economic Status	Low	70	39	109	$\chi^2 = 0.025$ $df = 1$ $p = 0.876$ $OR = 0.870$
	High	161	75	236	
Parity	Low	99	77	176	$\chi^2 = 1.396$ $df = 1$ $p = 0.651$ $OR = 0.870$
	High	132	37	169	
Knowledge	Low	155	25	180	$\chi^2 = 62.413$ $df = 1$ $p = 0.000$ $OR = 3.402$
	High	76	89	165	

Logistic binary regression analysis was conducted. Findings in Table 4 show that knowledge ( $p < 0.05$ ) was significant. An odds ratio showed an increase in knowledge yielded better practice by 1.64 units.

**Table 4** Regression output between individual factors and practice

Model	Unstandardized Coefficients		Standardized Coefficients	AOR	t	Sig.
	B	Std. Error	Beta			
(Constant)	2.441	.116			21.084	.000
Age	-.021	.018	-.058	0.97	-1.132	.258
Knowledge	.494	.087	.294	1.64	5.690	.000

#### 4 Discussion

The study sought to determine the relationship between caregivers' individual factors and home management of diarrhoea among caregivers of children below five years with diarrhoea in Ngandu location in Nyeri County. There was an association ( $\chi^2 = 7.340$ ,  $df = 1$ ,  $p < 0.001$ ) between respondent's age and practice of home management of diarrhoea. Cross tabulation showed that 73.8% respondents who were classified as old (40 years and above) had poor practice. This finding differs with findings of Kitony (2016) who found that there was a significant relationship between age and home management of diarrhoea in Kenya. The finding is dissimilar to findings of Desta *et al.* (2017) study, whereby the caregivers in Ethiopia who had a higher chance of having good practice by 4 and 3.6 times were in an age range of 25 to 35 years and between 36 to 45 years of age. The finding is also different with that of Amare *et al.* (2014) where mothers over 45 years of age in Ethiopia were the most vulnerable population for lack of enough information as compared to age group of 15-24 years. However, the finding is similar to the results of Hornimann (2017) which revealed no statistical major difference between the age and the effective home-based care of diarrhoea in South Africa. Similarly, age of the mother was also no significant in Gazi *et al.* (2015) study.

There was also a significant relationship ( $\chi^2 = 62.413$ ,  $df = 1$ ,  $p < 0.001$ ) caregiver's knowledge and practice of home management of diarrhoea. Caregivers who had high knowledge were more likely to have proper home management of diarrhoea practices. This tally with studies by Jha *et al.* (2006), Masiha *et al.* (2015), Pandey *et al.* (2017) and Desta *et al.* (2017) in Nepal, Pakistan, India and Ethiopia which also found that knowledge was a predictor of good home management of diarrhoea practices.

#### 5 Conclusion

The study concludes that there was a relationship between knowledge and home management of diarrhoea among caregivers of children below five years with diarrhoea. Going by the findings of the study, it was clear that there was need for health education on diarrhoea and its home management among mothers.

The study recommends enhanced education of mothers on home management of diarrhoea by community health workers.

#### Compliance with ethical standards

##### *Acknowledgments*

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##### *Disclosure of conflict of interest*

The authors declare that they have no competing interests whatsoever.

##### *Statement of ethical approval*

Authorization to conduct the study was sought from KNH/UON ERC, Karatina Sub-County hospital and from Deputy County Commissioner Mathira West Sub-County.

*Statement of informed consent*

Face to face interactions with potential respondents were done by the trained research assistants who identified persons fitting the inclusion criteria with the help of local leaders. The assistants acquired informed consent and then administered the questionnaire where consent was granted.

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