



Assessment of Utilization of HBCP Services for Children Diagnosed with Chronic and Terminal Illnesses Aged between 1-14 Years in Meru County, Kenya

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJARR/2021/15i330379

Editor(s):

(1) Dr. Fagbadebo Omololu Michael, Durban University of Technology, South Africa.

Reviewers:

(1) Fabiano Rito Macedo Amazonas, State University- Manaus, Brazil.

(2) Anil Kumar, All India Institute for Ayurveda (AIIA), India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/69048>

Received 12 March 2021

Accepted 22 May 2021

Published 24 May 2021

Original Research Article

ABSTRACT

Introduction: Worldwide, 57 million people died in 2008 from Chronic Illnesses, an estimated 40 million were in need of HBCP services with 6.6 - 10.8 million Children and adolescents dying [1,2]. 98% of Children with Chronic and Terminal illnesses (CI/TI) are found in low and middle-income Countries. Chronic and Terminal illnesses in Children are on the rise in Sub Saharan Africa. Kenya has lagged in implementation of Home Based Care to mitigate effects of CI/TI [3]. According to WHO, 2017 and Ministry of Health-Kenya 2013, millions of Children are affected by these Illnesses such as Tuberculosis, Asthma, Congenital abnormalities, HIV/AIDS and Cancer among others [4,5]. These illnesses have made families' to suffer emotional, psychosocial and economic hardships [6,7]. Evaluation of utilization of Home Based Care Program (EHBCP) services is significant in assessing effectiveness and quality delivery of HBCP [8,9].

Aims: To assess usage of minimum essential package required in provision of Home Based Care program services for Children aged between 1-14 years diagnosed with selected Chronic and Terminal illnesses in Meru County Kenya.

Study Design: A descriptive Cross Sectional Survey.

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Place and Duration of Study: Conducted in Meru County Kenya Health facilities between June 2018 and Dec 2019.

Methodology: Descriptive Cross Sectional Survey of 245 Health Care Providers and Caregivers of Children diagnosed with selected *Chronic and Terminal illnesses* by proportionate to size sampling and simple random sampling from different health facilities across Meru County was utilized.

Results: Utilization, delivery of quality and effective Home Based Care program was positively associated with age, experience of Health Care Workers (HCWs) 4.8 [95% CI = 1.06 – 21.68, P = 0.041]. HCWs profession, gender and years of work were positively related to utilization and delivery of HBCP services 3.03 [95%CI = 1.64 – 5.59, P<0.001].

Conclusion: Current study concludes that utilization of Minimum HBCP essential package by participants was not effective and the quality delivery of minimum HBCP essential services was inadequate, which agrees with Sips et al., 2014 study that poor service delivery leads to inadequate utilization, it concludes that restructuring HBCP services would meet individual needs for ill Children.

Keywords: Evaluation; caregivers; chronic and terminal illnesses; children; home based care program; health care workers.

DEFINITION OF OPERATIONAL TERMS

Activities of Daily Living: Refers to the routine activities (ADL) that person Undertakes every day with or without the need for assistance, such as: eating, bathing, dressing, toileting, transferring (walking) and continence control.

Caregivers: Refers to the guardian or biological parent who has been taking care of a child for the last six months involved in HBCP services for the Children diagnosed with Chronic and Terminal Illnesses.

Children: Refers to a person who is equal to one year or less than 14 years of age.

Client: Refers to any child who resides in a home-based Care centers Majority of Children referred to home based care are the subject of Protective services Intervention.

Chronic Illness: Refers to Health problems/conditions that requires ongoing management over a long period or decades as stated in WHO.

Effectiveness: Refers to the level or degree of achievement or accomplishment of HBCP services by HBCP offering health facilities or centers as set in accordance with WHO set standards.

Evaluation: Refers to assessment or judgement of various aspects HBCP services for Children with chronic and terminal illness management in terms of its context, inputs, processes and products as presented in CIPP model.

Health Care Provider: Refers to various medical and allied professionals involved in care for Children diagnosed with chronic and terminal illnesses. It's also synonymous with Health Care Worker

Hindrances: Refer to infrastructural, utilization of HBCP services, policy issues, and Stakeholder's involvement attributes limiting Home Based Care program services for Children with selected chronic and terminal illnesses.

Home Based Care Program (HBCP): Refers to planned set of activities, procedures and processes of care designed for provision of home based care services to Children diagnosed with selected chronic and terminal illnesses that is extended from the health facility to the clients' home through family participation and involvement within available resources according to World Health Organization/UNAIDS set standards.

Minimum Essential Package: Refers to the WHO defined components Prescribed for provision of Home Based Care Programme services for chronically and terminally ill Children.

Program: Refers to "any set of organized activities supported by a set of resources to achieve a specific and intended result."

Selected Chronic and Terminal Illnesses: Refers to identified conditions such as Tuberculosis, Asthma, Cancer, Heart conditions, congenital abnormalities, Stroke, and among other Chronic and Terminal illnesses.

Training: Means deliberate process of educating caregivers or re orientation of Health care providers to develop HBCP services delivery skills and competences that are required in management of Children with selected chronic and terminal illnesses.

Terminal illness: Refers to disease (s) or medical conditions with fatal outcome irrespective of management options provided.

Quality Means delivery of real time effective and efficient HBCP services to Children at Home in

accordance with WHO/UNAIDS set HBC program standards.

1. INTRODUCTION

Utilization and effective quality delivery of HBCP services for Chronically and Terminally ill Children determines the health outcomes and diseases process among affected Children in Kenya. Based on Meru County strategic plan report of 2013, lack and ineffective delivery of HBCP services is common in many Health facilities in the County despite numerous efforts to address the matter. A study by [2,10] revealed that 57 million died from chronic illnesses in 2008, Globally 40 million persons were in need of HBCP services, 44 out of 100 Children had no access to Home Based Care services globally, About 98% of Children living with Chronic and Terminal illnesses are found in Africa and other low and middle income Countries [3,11]. The study further showed that 88% of Children deaths –are due to Chronic and Terminal illnesses. The same study revealed that by 2008, 33 million Children (58% of the world's population) had no access to improved sanitation facilities. About 10.8 million Children under five years of age die in the world each year [1,2,12-14]. This is mainly from preventable conditions or diseases that can be managed effectively. Forty two countries account for 90% of child deaths while six countries account for 50% of these deaths [8,9]. Further, (WHO, 2020) stated that, 6.6 million Children and adolescents die annually from Chronic and Terminal illnesses. These deaths are attributed to the combined impacts of inadequate utilization, lack of effective delivery structures and quality of Home Based Care Services. A study by WHO, 2017 and MoH, 2013, confirms that millions of Children worldwide are affected by life threatening and limiting illnesses (Chronic and Terminal Illnesses) such as Tuberculosis, Asthma, Congenital abnormalities, HIV/AIDS and cancer among others. This illnesses cause them and their families' great suffering and economic hardships [7].

2. MATERIALS AND METHODS

This study was conducted in Meru County, between June and September 2019. The study was a descriptive cross-sectional survey. A sample of 245 respondents comprising of the Health Care Providers and Caregivers of Children diagnosed with CI/TI were selected using proportional to size, simple random

sampling was used to select the six health facilities across Meru County. The study achieved a response rate of above 100% of the original computed sample of 241 respondents. Descriptive analysis, multivariate logistic regression, and Odds ratios were pulled from Statistical Package format (IBM SPSS) version 25. Utilization, provision and delivery of quality HBC program services was used as the dependent variable. Variables such as professional disipline, years of practice, implementation period, education, employment period, age, sex, gender, parent/caregiver/guardian age, barriers to provision and delivery of HBC program services, determinants of the choice of preferred facility for Children HBC care services, Socio- economic, Cultural factors, skills, care competences acquired by Health care providers, HBCP caregivers, impact and processed skills reinforcing concepts through quality training were used as independent variables.

2.1 Sampling Method

The required sample size was computed using Taro Yamane formula [15], proportion to size of the population was used to estimate the minimum required sample for the study. A sample of 241 Health Care Providers/Caregivers of Children with selected Chronic and Terminal illnesses under Home Based Care program as respondents was computed.

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = Minimum required sample;

N = Population size;

e = Degree of tolerance error; with a significance level put at 95%, the degree of error term was 5% (i.e. 0.05). Therefore:

$$n = \frac{611}{1 + 611(0.05)^2}$$

n = 241 hence a Sample size of 241. Adjusting the sample upwards for 10% non-response, the sample is;

$$n_1 = \frac{241}{1 - 0.1}$$

Hence n was 268 respondents. Further, since the target population was less than 10000, the sample size was adjusted downwards using finite population correction factor (f.c.f) as follows;

$$n_{f.c.f} = \frac{n_1}{1 + \frac{n_1}{N}}$$

Where $n_{f.c.f}$ = the minimum desired sample size.

$$n_{f.c.f} = \frac{268}{1 + \frac{268}{611}}$$

$$n_{f.c.f} = 186$$

To ensure that we have a representative sample size, the study utilized proportional to size sampling method with the aid of the proportionality formula was thus used to allocate participants per site:

$$Q = \frac{A}{N} * n$$

Where:

Q = the number of the questionnaire to be allocated to each proportion.

A = the proportion of each segment.

N = the total population of all the segments.

n = the estimated sample size used in the study.

2.2 Data Collection and Analysis

The survey was carried out after thorough examination by the Meru University of Science and Technology (MUST) Institutional Research Ethics Review Committee (MIRERC) to ensure compliance to the ethical standards. A structured Likert questionnaire was administered. The questionnaire were pre-tested in neighbouring Tharaka Nithi County at Chuka teaching Referral Hospital. Chuka teaching and Referral Hospital County which borders Meru County. The instruments were tested for reliability and yielded a Cronbach's alpha of 0.75 and therefore considered reliable. The data was entered and analyzed using SPSS Software Version 25. Descriptive analysis, multiple regression, and Odds ratios were pulled with utilization and delivery of HBCP services being the dependent variable. The results were presented using descriptive and inferential statistics.

3. RESULTS AND DISCUSSION

3.1 Socio Demographic Characteristics

3.1.1 Gender and age

Five out of seven demographic factors was positively associated with level of Home Based Care for Children with selected chronic and

terminal illness, $P < 0.05$. Age category of the participants was significantly associated with increased level of utilization of Home Based Care. Low proportion of participants indicating that utilization of HBCP was good/very good/excellent for Children with CI/TI was observed among participants aged 31 – 40 years and 41 – 50 years compared to participants aged 21 – 30 years while participants aged 31 – 40 years were 63% 0.37 [95%CI = 0.20 – 0.68, $P = 0.001$] less likely to indicate that the utilization of HBCP was good/very good/excellent compared to participants aged 21 – 30 years., Likewise, participants aged 41 – 50 years were at 66% 0.34 [95%CI = 0.15 – 0.77, $P = 0.010$] less likely to indicate that utilization of HBCP was good/very good/excellent compared to participants aged 21 – 30 years. The findings show that there were equally as many female (49.4%) as there were male (50.6%) respondents included in the study. The results agrees with Muthuri et al. [16] who found that 61.3% of healthcare workers in both public and private sectors in Meru County were female, although both genders are well represented in employment in the public hospitals.

3.2 Employment Period and Length of stay in Workplace

According to Mule (2020), 76.5% of employees working for the County Government of Meru worked for a period of less than five years. These findings agrees with the results on age distribution of the respondents, where majority (46.1%) comprised of young and energetic health workers aged 21 – 30 years. This group is usually the newly recruited personnel, hence, the shorter duration of stay at the health facility. Participants who had worked in the health facility for a period of 1 – 3 years were 3.03 [95%CI = 1.64 – 5.59, $P < 0.001$] times likely to indicate that the level of HBCP was good/very good/Excellent compared to participants who had worked in the facility for 7 or more years.

3.2.1 Years of HBCP implementation in the health facility

Majority of the respondents 46.2% had practiced for five or more years, with 30% of the respondents having been in the discipline for 3-4 years while 23.2% of the participants had been in practice for 1-2 years. Number of years HBCP had been implemented in the health care facility

Table 1. Length of practice in professional discipline

Years	Frequency (n)	Percentage (%)
1 – 2 years	57	23.2
3 – 4 years	75	30.6
5 or more years	113	46.2
Total	245	100.0

was significantly associated with the improved levels of utilization of home based care while low proportion of participants indicating good/very good/Excellent was observed among participants who did not know when the HBCP was implemented compared to facilities that had implemented within 1 – 3 years ago. Type and background of the health facility was significantly associated with the level of home based care. Greater proportion of participants indicating that use of HBCP was good/very good/Excellent was observed among participants from private Health care facilities compared to participants from

public facilities. Participants based in private health facilities were 7.7 [95%CI = 2.94 – 20.27, P<0.001] times more likely to indicate good/very good/Excellent compared to participants from public health care facilities. As shown in Table 2, majority of the participants' reported that HBCP had been implemented in the health facility for close to 4-6 years, This shows that for hospitals in Meru County, home-based care programs have been in practice for reasonable duration, hence, the healthcare workers and caregivers were well familiar with the program.

Table 2. Home based care for children with selected chronic and terminal illness in relation to social demographic characteristic of the participants

Variables	Good/Very Good/Excellent		Poor/Fair		95%CI			P-Value
	N	%	n	%	OR	Lower	Upper	
Age category								
21 - 30 Years	83	73.5%	3	26.5%	Ref			
31 - 40 Years	41	50.6%	4	49.4%	0.3	0.20	0.68	0.001
41 - 50 Years	15	48.4%	1	51.6%	0.3	0.15	0.77	0.010
More than 50 Years	11	55.0%	9	45.0%	0.4	0.17	1.17	0.100
Gender								
Male	80	64.5%	4	35.5%	1.3	0.79	2.22	0.285
Female	70	57.9%	5	42.1%	Ref			
Years worked in this health facility								
1 – 3 years	77	73.3%	2	26.7%	3.0	1.64	5.59	<0.001
4 – 6 years	34	58.6%	2	41.4%	1.5	0.79	3.08	0.198
7 years or more	39	47.6%	4	52.4%	Ref			
How long have you practiced in your professional discipline								
1 - 2 years	39	68.4%	1	31.6%	1.7	0.88	3.36	0.113
3 - 4 years	48	64.0%	2	36.0%	1.4	0.77	2.57	0.261
5 years or more	63	55.8%	5	44.2%	Ref			

Legend: Ref = Reference, OR =Odds Ratio, CI confidence Interval

3.3 Global score of Health Care Workers in Health Facilities offering HBCP

Out of the two hundred and forty five participants, fifty (20.4%) were drawn from Maua Methodist Hospital, forty nine (20.0%) from Kanyakine Sub County Hospital, forty seven (19.2%) from Meru Teaching and Referral Hospital, thirty nine (15.9%) from Nyambene Sub County Hospital whereas, an equivalent count of thirty (12.2%) were drawn from Matuati Sub County Hospital and (12.2%) Mbeu Sub County Hospital respectively as shown in Fig. 1.

3.4 Assessment of Essential Minimum HBCP Package to deliver Quality HBCP Services

The study sought to assess the use of minimum essential package required for the provision of home based care program for children aged between 1 and 14 years. NASCOP's Home and Community Based Care Framework (2008) stipulates that minimum package of care includes nursing, clinical care as well as family care and support. In light of this, the study sought to evaluate the level of provision of the essential minimum package, nursing and clinical care as well as HIMS and health education and promotion towards providing homebased care services to these children. The researcher determined the usage of the essential minimum care package by asking respondents to state the level at which the minimum care package was provided. Most participants (44.5%) reported that stakeholders in Meru County Healthcare

Facilities never provided HBCP as shown in Table 3. Further, only a small proportion, that is 6.9%, 10.5%, 11.8%, and 16.0% stated that the Minimum essential Package was frequently and/or very frequently provided in Government, private, Faith Based organization (FBO) and Non-Governmental organization (NGO) health care facilities respectively. This implies that Meru County healthcare stakeholders do not adequately provide HBCP, as the service is rarely available to the public. This agrees with Gitonga [17] study, who noted that lack of collaboration with stakeholders, including NGOs and FBOs in implementation of health projects in Meru County is a factor hindering the achievement of health goals.

3.4.1 Assessment of nursing and clinical care to deliver and provide HBCP services

About 44.1% of the participants revealed that provision of nursing care services to Children diagnosed with CI/TI was never utilized, whereas 19.2% revealed that it was frequently used to provide HBCP services to Children diagnosed with chronic and terminal illnesses. Likert score constituted of ratings where 45.3% indicated that nursing care was never utilized to provide HBCP services, while 16.3% indicated that it was frequently utilized to provide HBCP services, 44.6% indicated that toileting was never done, while 17.1% indicated that it was frequently done, 44.5% indicated that hygiene care was never provided, while 18.1% indicated that it was frequently provided and 44.1% indicated that nutrition counselling and advice provision

Table 3. Availability and provision of minimum essential package by stakeholders

S/No.	Likert Items	1 F (%)	2 F (%)	3 F (%)	4 F (%)	5 F (%)	6 F (%)	Mean
1.	Government health care facilities	111(45.3)	19(7.8)	50(20.4)	48(19.6)	13(5.3)	4(1.6)	1.49
2.	Private health facilities	112(45.7)	9(3.7)	53(21.6)	46(18.8)	22(9.0)	3(1.2)	
3.	FBOS health facilities	111(45.3)	9(3.7)	46(18.8)	50(20.4)	26(10.6)	3(1.2)	
4.	NGOs health care facilities	111(45.3)	7(2.9)	34(13.9)	54(22)	32(13.1)	7(2.9)	
	Provision of Minimum HBCP essential package by stakeholders score	109(44.5)	5(2)	40(16.3)	63(25.7)	25(10.2)	3(1.2)	

Key: {Health Facilities Number -1F, 2F, 3F, 4F, 5F, 6F}

Table 4. Assessment of essential minimum HBCP package to deliver HBCP services

Likert items	Never n (%)	Very rarely n (%)	Rarely n (%)	Occasionally n (%)	Frequent n (%)	Very frequent	Mean	Cronbach's
Provision of Minimum HBCP Essential Package by stakeholders in Health Facilities to Children with CI/TI								
Government health care facilities	111(45.3)	19(7.8)	50(20.4)	48(19.6)	13(5.3)	4(1.6)	1.49	0.966
Private health facilities	112(45.7)	9(3.7)	53(21.6)	46(18.8)	22(9.0)	3(1.2)		
FBOS health facilities	111(45.3)	9(3.7)	46(18.8)	50(20.4)	26 (10.6)	3(1.2)		
NGOs health care facilities	111(45.3)	7(2.9)	34(13.9)	54(22)	32(13.1)	7(2.9)		
Provision of Minimum HBCP essential package by stakeholders score	109(44.5)	5(2)	40(16.3)	63(25.7)	25(10.2)	3(1.2)		
Provision of Psycho -social services								
Counselling of families	109(44.5)	7 (2.9)	48(19.6)	45 (18.4)	28(11.4)	8(3.3)	1.57	0.974
Counselling of caregivers	109(44.5)	6 (2.4)	48 (19.6)	46 (18.8)	25 (10.2)	11(4.5)		
Counselling of Health care providers	111(45.3)	12(4.9)	47(19.2)	45(18.4)	23(9.4)	7(2.9)		
Provision of Psycho-social services score	109(44.5)	8(3.3)	49(20)	47(19.2)	25(10.2)	7(2.9)		
Provision of Spiritual Support for Caregivers of Children with selected CI/TI								
Spiritual support to families	110(44.9)	14(5.7)	56(22.9)	39(15.9)	23(9.4)	3(1.2)	1.40	0.970
Spiritual support to relatives	110(44.9)	17(6.9)	61(24.9)	35(14.3)	17(6.9)	5(2)		
Spiritual support to	112(45.7)	11(4.5)	61(24.9)	36(14.7)	21(8.6)	4(1.6)		

Likert items	Never n (%)	Very rarely n (%)	Rarely n (%)	Occasionally n (%)	Frequent n (%)	Very frequent	Mean	Cronbach's
caregivers Provision of Spiritual Support caregivers score	109(44.5)	16(6.5)	65(26.5)	34(13.9)	17(6.9)	4(1.6)		
Provision of Physical Support Equipment and Aids to Children with selected CI/TI								
Waking up from Bed	110(44.9)	8 (3.3)	43(17.6)	50 (20.4)	23 (9.4)	11 (4.5)	1.52	0.959
Ambulation aids and facilities	111(45.3)	12(4.9)	42(17.1)	45(18.4)	30(12.2)	5(2.0)		
Walking aids	110(44.9)	18(7.3)	51(20.8)	36(14.7)	25(10.2)	5(2.0)		
Provision of Physical support equipment and aids score	110(44.9)	4(1.6)	54(22)	50(20.4)	23(9.4)	4(1.6)		
Provision of Legal support services to Children with selected CI/TI								
Property protection Legal Services support	115(46.9)	28(11.4)	48(19.6)	26(10.6)	20(8.2)	8(3.3)	1.29	0.975
Inheritance and handover of parental rights legal services support	115(46.9)	33(13.5)	45(18.4)	22(9)	25(10.2)	5(2)		
Caregivers Custody Legal Services support	114(46.5)	38(15.5)	38(15.5)	31(12.7)	17(6.9)	7(2.9)		
Provision of Legal support services score	114(46.5)	27(11)	54(22)	23(9.4)	22(9)	5(2)		

Table 5. Effective Use of Nursing, Clinical services to deliver and provide HBCP

Likert items	Never n (%)	Very rarely n (%)	Rarely n (%)	Occasionally n (%)	Frequent n (%)	Very Frequent n (%)	Mean	Alpha
Provision of Nursing care services to Children with selected CI/TI								
Nursing care	111(45.3)	9 (3.7)	50(20.4)	35 (14.3)	27 (11)	13 (5.3)	1.65	0.986
Toileting	110(44.9)	4 (1.6)	45(18.4)	44 (18)	28 (11.4)	14 (5.7)		
Hygiene care	109(44.5)	12 (4.9)	45(18.4)	31 (12.7)	33 (13.5)	15 (6.1)		
Nutrition	108(44.1)	7 (2.9)	43(17.6)	39 (15.9)	34 (13.9)	14 (5.7)		
Provision of Nursing care services score	108(44.1)	6 (2.4)	47(19.2)	37 (15.1)	34 (13.9)	13 (5.3)		
Provision of Clinical services for Children with selected CI/TI								
Consultancy Services	112(45.7)	8(3.3)	43(17.6)	34(13.9)	39 (15.9)	9 (3.7)	1.64	0.985
Treatment	109(44.5)	8(3.3)	43(17.6)	36(14.7)	35 (14.3)	14 (5.7)		
Prescriptions	108(44.1)	13(5.3)	39(15.9)	31(12.7)	38 (15.5)	16 (6.5)		
Adherence to Drugs	109(44.5)	7(2.9)	51(20.8)	43(17.6)	23 (9.4)	12(4.9)		
Pain management	108(44.1)	12(4.9)	52(21.2)	31(12.7)	28 (11.4)	14(5.7)		
Provision of Clinical services score	108(44.1)	8(3.3)	51(20.8)	32(13.1)	37(15.1)	9(3.7)		

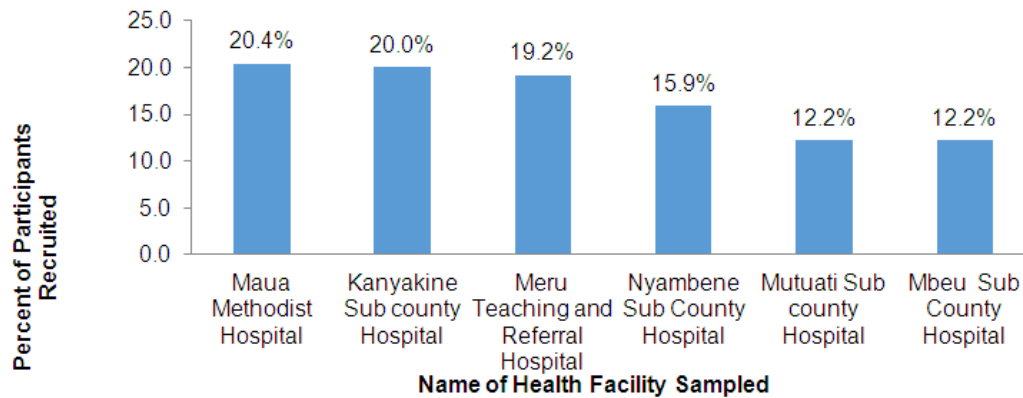


Fig. 1. Participants recruited per health facility

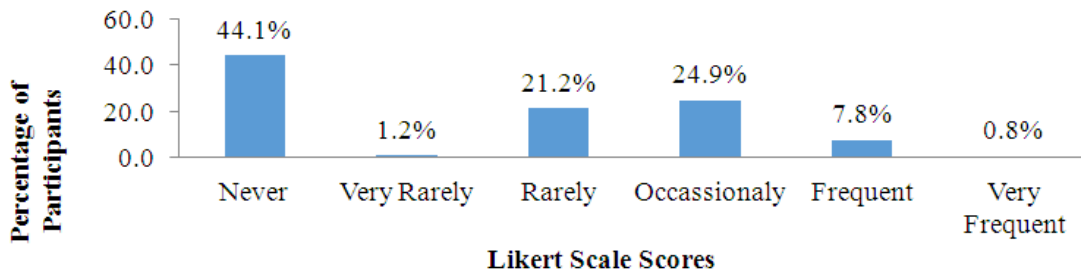


Fig. 2. Composite scores of minimum HBCP essential package used in delivery of HBCP services

was never used, while 19.6% indicated that it was frequently included as part HBCP services. In regards to utilization and provision of clinical services, 44.1% of the participants indicated that clinical services were never offered or utilized to provide HBCP services to Children diagnosed with Chronic and or Terminal Illnesses, while 18.8% indicated that it was frequently offered and utilized to provide HBCP services. This constituted of ratings where 45.7% indicated that consultancy services were never utilized compared to 19.6% who indicated that they were frequently utilized, 44.5% indicated that treatment was administered and utilized to provide HBCP services to Children diagnosed with Chronic and Terminal Illness compared to 20% who indicated that it was frequently used and utilized to provide HBCP services, 44.1% indicated that prescriptions were never issued or provided compared to 22% who indicated that they were frequently issued, 44.5% indicated that adherence to drugs was never observed compared to 14.3% who indicated that it was frequently observed and 44.1% indicated that pain management was never administered compared to 17.1% who indicated that it was frequently administered As shown in Table 5.

3.4.2 Composite scores of minimum HBCP essential package use in delivery of HBCP services

Generally, Participants indicated that utilization of Minimum HBCP essential package by stakeholders that is Provision of Psycho-social services, Provision of Spiritual Support caregivers, Provision of Physical support equipment and aids, Provision of Legal support services, Provision of Nursing care services, Provision of Clinical services, Health information management systems, Health education and promotion were at 44.1% never used, 1.2% done, 21.2% rarely done, 24.9% occasionally utilized, 7.8% frequently done and 0.8% very frequently adhered to. As shown in the Fig. 2.

3.4.3 Provision of nursing services

Nursing care services to Children with selected CI/TI was significantly associated with level of home based care. Participants who revealed that Nursing care services to Children with selected CI/TI was occasionally/frequently/very frequently provided were 1.97 [95%CI = 1.12 – 3.48, P =

0.019] times more likely indicate that the level of home based care was good/very good/excellent compared to participants who revealed that Nursing care services to Children diagnosed with selected CI/TI was never/very rarely/rarely provided. High proportion of participants indicating that the level of home based care was good/very good/ excellent was observed among participants who revealed that nursing care services to Children with selected CI/TI was occasionally/frequently/very frequently 60 (71.4%) provided compared to participants who revealed that Nursing care services was given to Children diagnosed with selected CI/TI was never/very rarely/rarely 90 (55.9%) provided.

3.4.4 Provision of clinical services

Clinical services for Children with selected CI/TI was significantly associated with level of home based care. Participants who revealed that clinical services for Children with selected CI/TI was given occasionally/frequently/very frequently provided were 2.36 [95%CI = 1.31 – 4.28, P = 0.004] times more likely indicate that the level of home based care was good/very good/excellent compared to participants who revealed that clinical services for Children diagnosed with selected CI/TI was never/very rarely/rarely provided. High proportion of participants indicating that the level of home based care was good/very good/ excellent was observed among

participants who revealed that clinical services for Children diagnosed with selected CI/TI was occasionally/frequently/very frequently 58 (74.4%) provided compared to participants who revealed that clinical services for Children diagnosed with selected CI/TI was never/very rarely/rarely were 92 (55.1%) provided.

3.4.5 Role of health education and promotion

Existence of health education and promotion to Children with selected CI/TI was significantly associated with level of home based care. Participants who revealed that health education and promotion to Children with selected CI/TI occasionally/frequently/very frequently existed were 2.14 [95%CI = 1.23 – 3.73, P = 0.007] times more likely indicate that the level of home based care was good/very good/excellent compared to participants who revealed that it never/very rarely/rarely existed. High proportion of participants indicating that the level of home based care was good/very good/ excellent was observed among participants who revealed that health education and promotion to caregivers of Children diagnosed with selected CI/TI was occasionally/frequently/very frequently 67 (72.0%) existed compared to participants who revealed that it never/very rarely/rarely 83 (54.6%) existed. Table 6 captures the eight factors.

Table 6. Level of HBCP for Children with selected Chronic and Terminal Illness in Relation to Effective Use of Minimum HBCP Essential Package

Likert Items Variables	Good/Very Good/Excellent		Poor/Fair		OR	95%CI		
	N	%	n	%		Lower	Upper	P-Value
Provision of Minimum HBCP Essential Package by Stakeholders to Children with CI/TI								
Never/Very rarely/Rarely	89	57.8%	65	42.2%	Ref			
Occasionally/Frequently/Very frequently	61	67.0%	30	33.0%	1.49	0.86	2.55	0.152
Provision of Psycho -social services								
Never/Very rarely/Rarely	93	56.0%	73	44.0%	Ref			
Occasionally/Frequently/Very frequently	57	72.2%	22	27.8%	2.03	1.14	3.63	0.016
Provision of Nursing Care services to Children with selected CI/TI								
Never/Very rarely/Rarely	90	55.9%	71	44.1%	Ref			
Occasionally/Frequently/Very frequently	60	71.4%	24	28.6%	1.97	1.12	3.48	0.019
Provision of Clinical services for Children with selected CI/TI								
Never/Very rarely/Rarely	92	55.1%	75	44.9%	Ref			
Occasionally/Frequently/Very frequently	58	74.4%	20	25.6%	2.36	1.31	4.28	0.004

Legend: Ref = Reference, OR =Odds Ratio, CI confidence Interval

4. DISCUSSION

This study involved 245 Health Care Providers and Caregivers of Children diagnosed with selected Chronic and Terminal illnesses and it sought to assess utilization of Home Based Care minimum essential package to provide HBCP services for Children aged 1-14 years diagnosed with selected Chronic and or Terminal illnesses by evaluating Home based care program from selected study sites of Meru County (Kenya Master Health Facility List, 2013 and U.S Census Bureau, 2016). The 245 Health Care Workers were sampled from one Level 5 Teaching and Referral Hospital and five sub county hospitals with mean age of 34.4 ± 9.06 (SD). Majority (46.1%) of the study participants were aged between 21 – 30 years while a small percentage (8.2%) were more than 50 years, this agrees with studies conducted elsewhere in the world revealed that Public Health interventions requires skilled health care workers (Mac Donald et al., 2016) [18].

4.1 Assessment of use of Minimum HBCP Essential Package

Utilization of Minimum HBCP essential Package by majority of the Health Care Workers indicated that usage minimum essential package to provide HBCP services ranging from Clinical, Nursing among other components of the essential package offered to provide minimum HBCP essential services to Children with selected CI/TI was good (117; 47.8%) which agrees with study in USA by Gans et al. [19]. However majority of participants indicated that the components of counselling families, caregivers, spiritual, legal support and physical/aids were never provided, these outcomes closely agrees with various studies done by (Nelson, 1990) (Kilmer et al., 2013) [18,20] to measure evaluate, plan, administration and define quality of minimum Home Based essential Package for effective quality Home Based Care services. In the FGD majority of the participants from both government and private health facilities indicated that they came from different sub - counties away from where the facility was located where low utilization of HBCP services such as Psycho-social, Nursing, Clinical, referral, Health education and promotion on Activities of daily Living at various health facilities [21-24].

4.1.1 Assessment of effective use of minimum HBCP essential package to deliver HBCP services

Generally, 44.1% of the respondents revealed that provision of nursing care services to Children with CI/TI was never utilized, whereas, about 19.2% revealed that it was frequently used to provide HBCP services to Children with chronic and terminal illnesses, while utilization and provision of clinical services, about 44.1% of the respondents indicated that clinical services were never offered or utilized to provide HBCP services to Children with Chronic and or Terminal Illnesses, while 18.8% indicated that it was frequently offered and utilized to provide HBCP services (119,120). Consultancy services were never utilized compared to 19.6% who indicated that they were frequently utilized, 44.5% indicated that treatment was administered and utilized to provide HBCP services to Children with Chronic and Terminal Illness compared to 20% who indicated that it was frequently used and utilized to provide HBCP services. About 44.5% of the participants indicated that health information management systems was never available in facilities to capture data for Children diagnosed with Chronic and Terminal Illnesses, while 13.9% indicated that it was frequently available and was used to capture data. For effective and provision of quality HBCP services capturing of real time HBCP data for improvement of Children with chronic and Terminal illness health status [4,5,8,10,25] (Aldridge et al., 2015, United Hospital Fund, 2015).

4.4.2 Assessment of effective and quality use of minimum HBCP essential package

The current study findings shows that most participants rated that stakeholders in health facilities never (109; 44.5%) utilized the minimum HBCP essential package to Children with CI/TI whereas a small proportion indicated that they are frequently (18; 11.4%) used by Children suffering from chronic and terminal illness. This means provision of HBCP care was not optimal as envisaged by WHO standards [2]. A study by Schatz et al., 2018 concurs with current study that most of the participants indicated that psycho-social services were never (109; 44.5%) utilized, whereas 13.1% of the respondents indicated that they were frequently used. This contradicts a study done in US which confirmed that effective utilization of minimum HBCP

services contributes to quality services and better child health outcomes [26-29].

4.4.3 Global score of minimum HBCP essential package use in delivery of HBCP services

Generally, majority of the participants indicated that utilization of Minimum HBCP essential package by stakeholders that is Provision of Psycho-social services, Provision of Spiritual Support caregivers, Provision of Physical support equipment and aids, Provision of Legal support services, Provision of Nursing care services, Provision of Clinical services, Health information management systems, Health education and promotion were at 44.1% never used. This is an indicator that there was overall poor utilization of minimum HBCP essential package by caregivers of chronically and terminally ill Children as per empirical study by Goodson et al. [20], Brust et al. [4] and Brust et al. [5].

5. CONCLUSION

The current study concludes that utilization of Minimum HBCP essential package by study participants was not effective and quality for delivery and utilization of minimum HBCP essential services was inadequate.

6. RECOMMENDATIONS

Emanating from the findings of this study, it is recommended the director of Medical Services and other stakeholders integrates HBCP into Health Care Systems to deliver effective and quality HBCP services for continuum of care for Chronically and Terminally ill Children. The study recommend continuous measurement, evaluation, planning and administration of quality minimum Home Based care program essential Package would largely mainstream and strengthen delivery of quality Home Cased Care in Meru County.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the author(s).

COMPETING INTEREST

The authors declare that they have no financial or personal relationship(s) which may have

inappropriately influenced the writing of this article has attached competing interests. There was no funding that was received for this research paper.

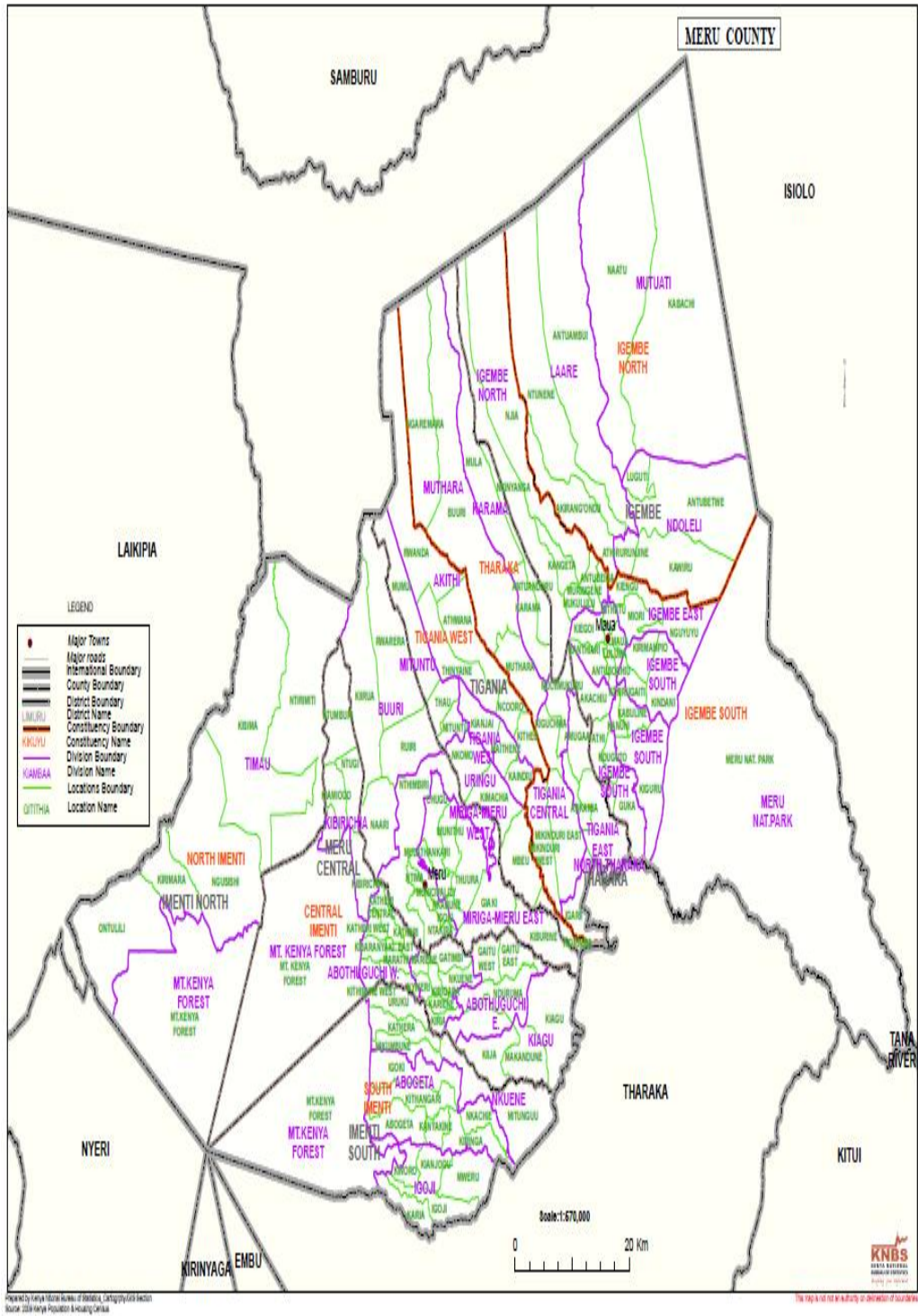
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APPENDIX



Appendix 1. Map of Meru county with sub county boundaries
Source: Map of Meru County showing Administrative locations (from Google and Kenya National Bureau of Statistics KNBS, 2014)



Appendix 2. Map of Kenya showing the position of Meru county

Source: Map of Kenya showing County Boundaries and location of Meru County (from Google and Kenya National Bureau of Statistics, KNBS, 2014)

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Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/69048>