International Journal of Nursing Research (IJNR)

International Peer Reviewed Journal

Research article

Evaluation survey on training of community-based child growth monitors and promoters in Zambia

Caroline Zulu*, C. Michelo[1], C. M. Ngoma[2]
*University of Zambia, School of Nursing Sciences, P.O. Box 50110 Lusaka
[1]University of Zambia School of Public Health P.O. Box 50110 Lusaka
[2] University of Zambia School of Nursing Sciences P.O. Box 50110 Lusaka

Abstract

Background: CCGMP is a relevant complementary activity for many of the actions and interventions that need to be undertaken for the proper growth of children, especially in the under privileged communities, like Zambia.
Design and Methods: This research applied a cross-sectional survey and this publication shows findings from the quantitative method, using scheduled questionnaire that was applied to collect data. One-to-one interview method to fill in the questionnaire was used because of the respondents' level of education, as most were semi-literate. The cross Sectional Survey was applied to facilitate evaluation of the training programmes for CCGMPs in order to identify possible gaps between the curriculums, training process and practices that were recommended training and implementation of the CCGMP programme.
Results: Study significantly revealed that training of CCGMPs was inadequate because they as they spent very short duration, not as recommended by the National Food and Nutrition Commission curriculum (NFNC 2000), questioning extent to which topics were covered both theoretically and practically. The practical part suffered the most as they spent not only a shorter duration but also lack of supervision and follow up after training. Due to the limited time spent on training, learning from these programs was inadequate. In practice, weighing methods were inconsistent and Nutrition counselling to the caregivers/mothers was lacking at almost all of the study sites.
Conclusion: This study proves that CCGMPs were inadequately trained, despite them making great contribution (97%) towards monitoring of the Zambian children. This could be a major contributor their poor performance in implementing services, consequently leading to persistently high infant and child mortality rates.

Key words: Community-Based, Curriculum, Training, Content, Methodology.

***Corresponding author: Dr. Caroline Zulu,** University of Zambia School of Nursing Sciences P.O. Box 50110 Lusaka Email: caroline.zulu@unza.zm; caroline.zulu482015@gmail.com

1. Introduction

Like many other Sub-Saharan countries, Zambia faces significant challenges of infant and young child survival. Zambia Demographic and Health Survey statistics recorded a decline in young child mortality from; 34, 70 and 119 per 1,000 live births to the most recent [1] at 29.4, 56.4 and 88.5 per 1,000 live births for neonatal, infant and under-five mortality respectively; however these rates still remain unacceptably high. Despite all the efforts being implemented by the government to ensure good health and growth for the Zambia children, possible causes of the above figures of young child mortality to remain unacceptably high may be; poor surveillance, poor implementation of Child Survival Interventions (CSI) most probably due to incompetent performance of Community-Based Child Growth Monitors and Promoters CCGMPs which could be caused by many factors including inadequate training. Community-based child growth monitoring and promotion (CCGMP) activities are extremely relevant in countries like Zambia, where there is low awareness of the causes of malnutrition and where families do not have the necessary information to help them protect and promote their children's health. The cadre of community health workers are key players in developing countries due to serious financial and human resources constraints. This article presents policy-makers and programme managers with key considerations for a model to improve the training and work environment as an

important approach to increase CCGMPs productivity and, ultimately, the effectiveness of community-based strategies. Major recommendation from this study is that the CCGMPs training curriculum and program should be extensively reviewed and updated to appropriately address the critical issues that are missing from the CCGMP program or are inadequately addressed. This needs to be done in light to strive in achieving the UN's third (3rd) sustainable development goal of "Good Health and well-being by 2020."

Because weighing and charting alone cannot improve growth, promotional activities are also needed. These include counselling and action to improve child growth. CCGMP activities can provide an entry point for households and local groups to use the information on child growth to guide activities that address the problems identified [2]. CCGMP is a relevant complementary activity for many of the actions and interventions that need to be undertaken for the proper growth of children, especially in the under privileged communities.

World Health Organization (WHO) defines Growth Monitoring and Promotion (GMP) as a nutritional intervention that measures and charts the weight of children from 0 to 5 years of age and uses this information to counsel parents so that they take actions to improve child's growth [3]. GMP is one of the key elements of child survival and primary health care strategies in Zambia as it enables monitoring and promotion of the growth and development of a child in order to detect the earliest changes and bring about appropriate responses to ensure that growth continues uninterrupted [4]. The emphasis of GMP has been on monitoring growth rather than the 'promotion' of growth [5]. It is important therefore that, clear and feasible guidelines for training, designing, implementing, monitoring and evaluating child growth monitoring and promotion programs (CGMPs) are important so that strengths and weaknesses in activities of the program can be identified on time for amendment [6].

In a study by [7] conducted in a semi-urban community in South Africa, to assess the feasibility of a community-based growth monitoring model (CBGM) in alleviating the shortcomings in health and nutrition surveillance of preschool-aged children as practised by the health services, results showed that the CBGM model is not a blueprint, but should be recommended for alleviating shortcomings of Health Facility Practices (HFPs) in urban areas. It had the capacity for large-scale implementation, monitoring, follow-up and evaluation of programmes on a sustained basis, including nutrition surveillance, and vitamin A, iron and food supplementation. It provided accurate and representative data on nutritional status and ensures comprehensive detection and targeting of high-risk groups for intervention. The community-based growth monitoring model demonstrated that community participation and mobilisation was able to increase preschool child growth monitoring coverage extensively and contribute to improved health and nutrition surveillance [8].

As in Zambia, mortality rates among Nigerian children remain unacceptably high with infant and under-five mortality rates of 87 per 1000 and 171 per 1000 respectively (National Population Commission (NPC) [Nigeria] & ICF Macro, 2009). The WHO (2006) reports that 38.3% and 28.7% of fewer than 5 children in Nigeria are stunted and underweight respectively. A study was conducted in Nigeria by [9], who alluded to the fact that the success of growth monitoring and promotion (GMP) depends on the knowledge and expertise of the PHC workers. The study was aimed at assessing PHC workers' knowledge, attitudes and practices regarding monitoring growth and development in Nigerian children [10].

Studies in this chapter indicate that the GMP program helps to reduce infant and child mortality, because malnutrition is, in part, responsible for high rates of mortality of children aged less than five years, as observed in developing countries, and thus boosts the achievement of the millennium development goals [11]. The GMP programme has however been criticized, some suggesting that the benefits of GMP programmes are minimal and/or imperceptible as well as questioned its efficacy due to the programme mostly being implemented by none professional health personnel, especially in African countries, and these mostly have insufficient training [12]. Most studies have argued that the reportedly poor efficacy of GMP programme results from associated problems which are mainly the lack of adequately trained providers and not the problem of the programme itself [13].

The quality of training of community health workers, including CCGMPs, requires significant resources and efforts. In an evaluation of nine projects (governmental and non-governmental) in Africa and Asia that included GM, most of the settings had adequate infrastructure to support GM but training was incomplete, leaving only a small proportion of the staff able to adequately take weight measurements. In addition, the low educational level of community workers in some settings impedes their capacity to interpret and analyse growth measurement results, identify at-risk children, and analyse possible causes of growth faltering [14].

Conclusion of introduction

Researchers of this study decided to focus on the arm of evaluating the training of CCGMPs and how it affects implementation of the GMP program by trying to answer the question; "How adequate is the training programme for CCGMPs in Zambia to guarantee their attainment of required skills and competencies which should enable them to provide quality services in order to improve child survival?" as the main objective and how it affects their attainment of the required skills and competencies to enable them provide quality services in order to improve child survival.

2. Design and methods

Study was conducted in Zambia, Lusaka an urban district and Chirundu a rural district which were purposively selected in order to necessarily provide a diverse picture of the Zambian society.The two districts were selected to represent the two main areas with different life styles in Zambia; Lusaka represents the urban area that has more and better health facilities for access but are highly populated; Chirundu is a rural area with limited health facilities leading to a lot of hardships of accessibility of health care services, but less and sparely populated.

For selection of sample, inclusion Criteria for CCGMPs eligible to participate in this study were residents of Lusaka and Chirundu districts and/or providing community-based child growth monitoring and promotion services to the children. CCGMPs who had some form of training using any curriculum related to community-based child growth monitoring and promotion from the MOH, Church-based Organization or any other NGO or are currently working as a CCGMP and were oriented by nurses and their colleagues on what to do as they provide the services. Multistage sampling was applied to select the Health Centers to be included in the study and these were selected on basis of those with largest catchment population in the two districts as well as being accessible for the research team to be able to collect data. CCGMPs were conveniently selected by including all CCGMPs that came to work at the GMPs when the researcher and her data collection team went to the GMPs to collect data. These included CCGMPs who were able to provide consent to participate in the scheduled interview.

This research applied a quantitative study design, using across-sectional survey. Publication shows methods and findings from the quantitative research, applying a structured questionnaire to facilitate evaluation of the training programmes for CCGMPs in order to identify possibly existing gaps between the curriculum, training process and practices that are recommended and those that are actually being practiced in the training and implementation of the CCGMP programme. This quantitative study method comprised of the main target population which included four hundred (n=400) Community-based Child Growth Monitors and Promoters (CCGMPs) at the sampled health centre who were actively involved in community activities, and who had received some training and/or were currently working with children within the selected study sites. The 400 were further divided between two (2) selected areas of Chirundu and three (3) areas of Lusaka using proportional sampling method, according to the population coverage of each catchment area.

Figure 1 below shows the five (5) sites from which data was collected. Proportional sampling was applied at this stage to obtain the sample size of each area according to its catchment population in order to ensure adequate representation from each site. Kanyama being the highest populated compound had the highest number of respondents with 114 (28.5%) representation. As expected, each of the three compounds in the urban area of Lusaka had more respondents than the two areas in the rural areas of Chirundu as these are less populated. This method of sample size determination was intentionally applied in order to have equal representation to reduce the possibility of bias.

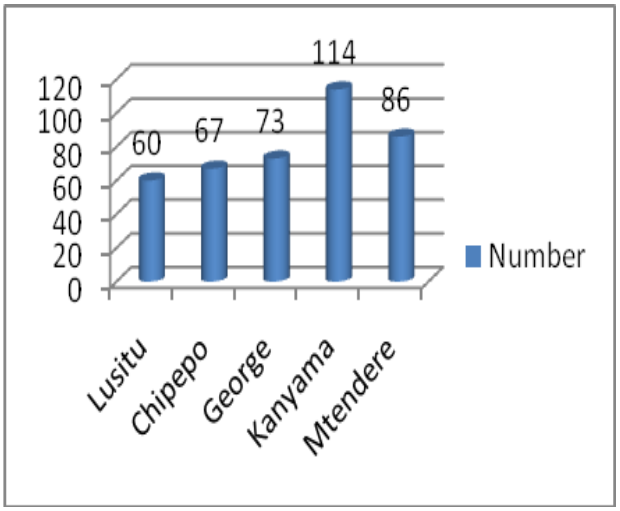

Figure 1: Sites of data collection and proportional sample size determination n=400

The cross sectional survey included the following main variables; respondents' socio-demographic characteristics to describe the participants, curriculum content, duration of training, and methods used during training.

A scheduled questionnaire was applied to collect data using one-to-one interview method to fill in the questionnaire with the CCGMPs because of the respondents' level of education, as most were semi-literate. The structure of the interview schedule comprised of four (4) sections in relation to the variables that were studied:

Section A was designed to elicit information on the respondents' socio-demographic data for the purpose of the participants' general description. The following socio-demographic variables were included for the general description of the participants in order to better understand them: Gender, age, religious denomination, level of education, marital status, nationality and main source of income of the participants.

Section B consisted of questions that helped the researcher to investigate several determinants of training CCGMPs including curriculum content, duration of the CCGMPs' training and methodologies used when training the CCGMPs.

Section C consisted of questions that measured the determinants of knowledge levels and practices of

CCGMPs during service delivery. These are factors that mainly affect the practice of CCGMPs in relation to their training, as they provide services in terms of and quality care services for monitoring and promoting the children's growth and health.

Section D facilitated the researcher to obtain information on the challenges faced by the CCGMPs, their recommendations and suggestions of how to overcome the challenges. Consent was obtained from each participant, by a process of the researcher and research assistants explaining the importance and objectives of the research so that the participants understood the value in them participating. Confidentiality and anonymity was observed by using research serial numbers instead of participant's name on scripts so that there is no way to trace which script was answered by whom.

Data was gathered, reviewed, coded, entered into computer software of SPSS version 22 and then analyzed to form findings or conclusion. The analyzed numerical (quantitative) data was represented in mathematical terms, using some common statistical measurements. Frequency distribution indicated the frequency of each response and provided additional information beyond the mean, as it allowed for examining the level of consensus among the data. The mean score represented a numerical average for a set of responses. Standard deviation indicated the degree of consistency among the responses.

The standard deviation, in conjunction with the mean, provided a better understanding of the data. Cross tabulation being higher levels of statistical analysis were used to obtain two by two tables applying Chi-square and Regression analysis in order to ascertain association between variables.

3. Results

Table 1: Social Demographic distribution of participants n=400

Variable	Category	n (%)
Gender of participants	Male	90 (22.5)
	Female	310 (77.5)
Age of participants	Below 40 years	128 (32)
	Above 40 years	272 (68)
Religion	Roman catholic	176 (44)
	Protestant & Pentecostal	103 (56)
Education Level	Secondary & Tertiary	291 (72.8)
	Primary & Never been to school	109 (27.3)
Marital status	Single/Widow/Divorced	63 (15.8)
	Married	337 (84.3)
Main source of income	Formally Employed	116 (29)
	Self Employed	284 (71)

Table 1 shows that, majority (77.5 %) of the respondents were female as expected since traditionally it is women's major role to take care of children and not men. Most of the volunteers who participated in this study had attained only up to secondary level (together with very few tertiary level) of education 291 (72.8%) and those that had gone through primary school or had never been to any formal school were 109 (27.3). Majority, 337 (84.3%) of the participants were married while 63 (15.8%) were either single or widowed. All of the participants 400 (100%) were of Zambian Nationality. Majority (71%) of the CCGMPs were self-employed, mostly managing their own small businesses of buying and selling as their source of income and the rest of the respondents 116 (29) were formerly employed as casual workers or as clerks by the clinic.

Majority (84.8%) of respondents were trained in programmes that were closely related to CCGMP Training, representing a significant number of the volunteers that provide the CCGMP services. These included those trained as Child Health Promoters (CHP) 166 (41.5%), the community health workers CHW 120 (30%), nutritionists 23 (5.8%) and traditional birth attendants 46 (11.5%). Other categories trained in programmes not so related to CCGMP but were providing the services were the minority 61 (15.3%) and they included lay counselors 23 (5.8%) trained in HIV testing and ARV adherence support, 19 (4.8%) were trained in other several categories as TB treatment support, peer educators, income generating activities, treat and test for malaria. A few respondents 17 (4.3%) acknowledged that they were trained only after volunteering to work as CCGMPs and their training was informal mainly by fellow volunteers in the field.

Three (3) variables were the major determinants of training were investigated in this study; curriculum content which was taken as the yard stick for training, duration of training and methods used during training.

Table 2: Training curriculum content by topics covered n=400

Topic	Covered content	n (%)
Growth Monitoring	>70%	255 (63.8)
	<70%	144 (36%)
Interpreting growth indicators	>70%	202 (50.5)
	<70%	198 (49.5)
Nutrition Counselling	>70%	127 (31.8)
	<70%	272 (68)
Handling a sick child	>70%	75 (18.8)
	<70%	325 (81.3)

Table 2 shows that for the major topic: Growth Monitoring, majority 255 (63.8%) indicated that they

had covered enough of the topic as they scored more than 70% on the likert scale. However 144 (36%) scored having covered less than 70% of content on this topic and were rated as not having covered enough content on this topic. Similarly on the topic Interpreting growth indicators, about half 202 (50.5%) indicated that they covered more than 70% of topic and the remaining half 198 (49.5%) covered less than 70% on the topic which was rated as not having covered enough content.

A slightly different trend of responses was noted on the topic; Nutrition counseling and only 127 (31.8%) indicated having covered more than 70% of this topic while the rest 282 (68%) responded having covered less than 70% which was not enough content on this topic.

This also applies to the topic; Handling a sick child which continued to indicate a reduction in the content covered on this topic were only 75 (18.8%) indicated that they covered more than 70% and the rest 325 (81.3%) had covered less than 70% which is not enough content coverage.

Table 3: Duration of training for CCGMPs

Variable	Duration of training	n (%)
Duration of being trained	< 10yrs	196 (48.8)
	> 10yrs	205 (51.3)
Duration of theoretical training	> 6 weeks	127 (31.8)
	< 6 weeks	273 (68.3)
Duration of practical experience	> 6 weeks	46 (11.5)
	< 6 weeks	352 (88)

Table 3 indicated that about half of the participants (48.8%) had been trained for more than ten (10) years at the time of the study, while the other half (51.3%) had been trained for less than ten (10) years.

Duration of theoretical training varied from six (6) months to not having been formally trained at all, and these only trained practically after volunteering. For theoretical training only 127 (31.8%) had trained for an adequate duration theoretically for six (6) weeks and above, while majority (68.3%) had trained for less than six (6) weeks which is inadequate duration for the CCGMPs' training, according to the National Food and Nutrition Commission (NFNC 2000) curriculum which was used in this study, as the universe of analysis to evaluate curriculum content. Only about 112 (28.0%) trained for a period of 6 weeks, followed by those who trained for 1 week 82 (20.5%) and two weeks 80 (20.0%) respectively. Worse still, 73 (18.3%) trained theoretically for only two weeks, while 17 (4.3%) were trained for only 1 to 3 days.

Duration of practical training ranged from 3 months to never being trained practically. Very few participants 46 (11.5%) had trained in the practical area for six (6) weeks or more and the majority of the respondents 352 (88%) had trained for less than 6 weeks. Of these, 149 (37.3%) had practical training for less than a week and almost the same number 142 (35.5%) had practical training for a period of only a week. Thirty seven 37 (9.3%) responded that their practical training was only two weeks, followed by 36 (9.0%) whose practical training was for four weeks. Those that were not formally trained practically were only 26 (6.5%).

Table 4: Methods used in training

Variable	Methods used during training	n (%)
Methods used during training	Enough	215 (53.8)
	Not Enough	185 (46.3)

Table 4presents a mixture of methods used during training of all the CCGMPs and more than half, 215 (53.8%) indicated that the following methods were used; classroom lecturing/teaching, demonstrations, slide shows, role plays, reading, group discussions, written exercises and received individual feedback. The rest 185 (46.3%) indicated that not enough methods were used to train them which included only lecturing and discussion.

Upon cross tabulating the two variables: covering enough curriculum content and adequate duration of time spent to cover the content, the chi-square test showed a statistical significance of a P-value 0.015, continuity correlation of significance 0.027, likelihood ratio of 0.02 and linear-by-linear association of significance 0.015. This shows that there is a close relationship between spending adequate time in order to cover adequate curriculum content.

Determinants of knowledge of CCGMPs

Knowledge of CCGMPs was presumed to be attained during their training and it was the major determinant of the practice of CCGMPs during service delivery. Knowledge level depending on the major topics that were covered during training of CCGMPs was therefore measured on a likert scale and findings were presented.

Table 5: Knowledge levels, n=400

Variable	Category	n (%)
Knowledge Levels	Knowledgeable	90 (22.5)
	Not Knowledgeable	310 (77.5)

Table 5 presents data on the knowledge level of the CCGMPs, only 90 (22.5%) were knowledgeable while majority 310 (77.5%) were not knowledgeable. The knowledge variables were analysed on a likert scale according to the major topics that were covered during the CCGMPs' training. Questions were asked to measure the variables according to cut off points which were determined to measure if the volunteer was knowledgeable or not. A good number of participants 339 (84.8%) defined CCGMP correctly but 61 (15.3%) defined the concept wrongly and 382 (95.5%) knew the Colour of under 5 card according to gender of the baby

yet it's surprising that 18 (4.5%), had no knowledge of this basic but important aspect with regard to child growth monitoring. A large number of participants 167 (41.8%) did not know how to correctly check the scale before weighing the child, 134 (33.5%) actually wrongly checked the scale while only, 99 (24.8%) knew how to correctly check the scale before weighing the children. Surprisingly, 299 (74.8%) indicated how to correctly weigh an older child and the rest 101 (25.3) did not know the correct procedure to weight an order child. It is still surprising that even though 358(89.5) knew how to prepare a child for weighing especially in cold weather, 42 (10.6), still did not know how to correctly prepared a child for weighing.

Only 141 (35.3) respondents knew how to correctly record weight on the under 5 card, while 186 (46.5) only knew how to partly correctly record the weight while 73 (18.3) wrongly record the babies' weight on the card. Majority 333 (83.3) had Knowledge of the reason for weighing the under 5 child while 47 (11.8) where partly knowledgeable and 20 (5.0) were not knowledgeable. Most 278 (69.5) of the respondents knew how to interpret the curve of the road-to-health though 83 (20.8) only interpreted it partly correctly and 39 (9.8) could not correctly interpret the curve.

On the nutritional advice to be given to a mother of a child with growth faltering, 314 (78.5%) gave the correct advice, 55 (13.8%) gave partly correct advice and 31 (7.8%) gave the wrong advice. Almost all, 397 (99.3%) knew the interval of conducting growth monitoring sessions on each baby that its monthly and only 3 (0.8%) did not know the interval. The largest number of respondents, 193 (48.3%) did not know the age and interval at which the vaccine DPT should be given to the babies, 155 (38.8%) were knowledgeable while 52 (13.0%) were only partly knowledgeable. On the importance of information on the under 5 card 261 (65.3%) were knowledgeable, 94 (23.5%) were partly knowledgeable and 45 (11.3%) were not knowledgeable. On the use of the under-five that bit is very important in the life of the baby, 265 (66.3%) were knowledgeable, 110 (27.5%) were partly knowledgeable and 25 (6.3%) had no knowledge.

Table 6: Demographic variables and Knowledge Level

Variable		Proportions	aOR 95% CI
Age range	<40yrs	(34%)	2.1; 95%CI (1.1, 3.8)
	>40yrs	(68%)	
Educational Level	Secondary	(73%)	1.6; 95%CI (1.0, 2.8)
	Primary	(27%)	
Marital Status	Single	(16%)	0.9; 95%CI
	Married	(84%)	(0.5, 1.7)
Org. which Trained	Govt DHMT	(27%)	1.4; 95%CI (0.8, 2.5)
	NGO/FBO	(73%)	
Source of Income	Self Employ	(71%)	1.8; 95%CI (1.0, 3.1)
	Forma Employ	(29%)	
Trained as	No GM content	(15%)	0.2; 95%CI (0.0, 0.5)
	GMP content	(85%)	

Table 6 shows logistic regression results, and there was no association between Knowledge levels and the demographic characteristics age, educational level, and source of income of the CCGMPs. There is no association of statistical significance with almost all the social demographic variable. It was however, not surprising that there was a statistical relationship between the level of knowledge and the training that they underwent, as the training that contained growth monitoring (GM) covered more related topics and so they were more knowledgeable in GMP than those trained in courses without GMP content OR 0.2 at 95% CI 0.0, 0.5

Determinants of practice of CCGMPs

The practice of CCGMPs was presumed to be determined by the training that they underwent and the knowledge that they attained both during and after training

Table 7: Determinants of practice of CCGMPs n=400

Variable	Category	n (%)
Duration of being a CCGMP	For > 10 years	158 (39.5)
	For < 10 years	242 (60.5)
Number of CCGMPs in their area	More than 10	84 (21.1)
	Less than 10	316 (79)
Availability of weighing scale and bag at GMP	Scales available	137 (34.3)
	Scales not available	263 (65.8)
Number of children at every GMP session	> 200 up to 500 Children per GMP	272 (68)
	< 200 children per GMP	128 (32)
Technical support by health workers	Supported at every weighing session by HW, mainly for vaccinations	336 (84)
	Do not receive technical support from HW	64 (16)
Motivated/remunerated	Yes	81 (20.3)
	No	319 (79.8)

Table 7 presents some determinants of practical experiences that affected the practice of CCGMPS. Majority of the respondents (60.5%) had been working for less than 10 years and158 (39.5%) had worked for less than 10 years as CCGMPs. Majority 316 (79) indicated that there were less than 10 CCGMPs working in their catchment area and 186 (46.5%) indicated that most of the times during Growth monitoring sessions there were less than 5 CCGMPs available to carry out the work at the GMP session.

When asked how often GMP sessions were conducted in the area, most respondents 360 (90.0%) indicated that they were carried out on a monthly basis while, 40 (10.0%) said that they are conducted once in a while as these were newly established points for these activities. Majority (44.0%) responded that the only other service offered apart from weighing children at the GMP is general Health Education, 152 (38.0%) included that other several services were offered including; Nutrition counselling, vaccinations and referral for further management of sick baby then sixty eight 68 (17.0%) respondents included these other services; VCT, post natal care to neonate and mother, treatment of minor elements as being offered during GMP sessions.

Majority (65.8%) indicated that weighing scale were not readily available, while only 137 (34.3%) indicated that they were available though they had to share one scale between 4 to 8 GMP point, had to walk for several kilometers to collect them from nearest Health Center and were usually in poor condition especially the weighing bags and 24 (6.0%) and that especially standing scales were a major challenge.

Regarding work load of the CCGMP, the scenario is not different from the professional health workers. The number of children that were attended to at GMP sessions indicate that, majority 272 (68) estimated that they attended to more than 200 children, sometimes up to more than 500 at GMP sessions, while only 128 (32) estimated that they attended to less than 200 children at GMP. Some respondents indicated that most of the times they cannot cope with the overwhelming numbers of children who come for GMP sessions and so some children are sent back home unattended, meaning that children do get missed and therefore do not receive vaccinations at the stipulated time.

Majority of the respondents (84%) reported that they received technical support from health workers from the health centre whenever during GMP session while only 64 (16%) reported that the health workers were unable to provide technical support due to shortage at clinic. Almost all respondents (99.5%) of the n=400 said that they liked and needed professional health worker supervision as they do their work. Most (97.5%) agreed that the CCGMP program was helpful and useful to the entire community, though 10 (20.5%) indicated that it was not helpful or useful. Asked how helpful and useful the CCGMP is 138 (34.5%) noted that it reduces distance and serves time for mothers to attend to other chaos since the sessions are conducted nearer to their residential areas than at the health centres, 134 (33.5%) expressed that it was helpful as it reduced congestion at clinic and makes work easier and improves coverage of children to be monitored and improves health of children.

These were major determinants of the CCGMPs' performance in terms of skills and competencies as presented in the results of a study by Jaskiewicz et al. [15] who expressed in their study "CHW productivity is determined in large part by the conditions under which they work. Attention to the provision of an enabling work environment for CHWs is essential for achieving high levels of productivity. We present a model in which the work environment encompasses four essential elements—workload, supportive supervision, supplies and equipment, and respect from the community and the health system—that affect the productivity of CHWs. We propose that when CHWs have a manageable workload in terms of a realistic number of tasks and clients, an organized manner of carrying out these tasks, a reasonable geographic distance to cover, the needed supplies and equipment, a supportive supervisor, and respect and acceptance from the community and the health system, they can function more productively and contribute to an effective community-based strategy".

Only 81 (20.3%) of the respondents indicated being remunerated and/or motivated for the work they did while majority 319 (79.8%) said that they were not remunerated or motivated at all. Asked how they were motivated, 285 (71.3) indicated not being motivated at all, 77 (19.3%) indicated that they were paid a small allowance by government once per year only during Child health week. A few respondents 31 (7.8%) explained that they made an agreement with the community and their leaders and they charge a small fee of K1 to mothers as they bring their children for the GMP session, 4 (1.0%) indicated having been given T-shirts once in a while and only 3 (0.8%) mentioned being motivated by workshops and refresher courses once in a while.

Table 8: Summary of respondents' suggestions and recommendations n=400

Suggestions and Recommendations		
	Frequency	Per cent
GRZ Pay & provide supplies + protective clothing	248	62
More training + other	152	38
Total	400	100

Table 8 presents a variety of CCGMPs' suggestions and recommendations to the government through the Ministry of Health (MOH), indicating a good number of them 248 (62%) suggested that the government (GRZ) should pay them some allowances regularly, provide basic supplies, transport in form of either bicycles or money to facilitate work and protective clothing uniform, T shirts, aprons, umbrellas, gumboots and infrastructure. The rest 152 (37.8%) made a list of suggestions that the government should conduct more training and refresher courses, provide drugs for use by CCGMPs, consider awards to long working CCGMPs or consider their children for employment whenever opportunity arises.

Table 9 shows that there was no association between adequate training and all of the demographic characteristics of the participants including; age, educational level, marital status, organization that trained and source of income of the CCGMPs. It is not surprising that there is an association of statistical significance of odds ratio (OR) 0.5, CI 0.1, 0.5 between adequate training and the organization that trained the CCGMP.

The NGOs and Faith-Based organizations trained the CCGNPs more adequately than the government through the DHMTs probably due to the fact that the later trained them for many more other roles and tasks while the earlier organizations specified their training more on the GMP roles.

Surprisingly, this trend was similar with the Source of income and adequate training of the CCGMPs. Self-employed CCGMPs were more adequately trained than the formally employed CCGMPs at an OR 0.5 and CI 0.1, 2.1

4. Discussion

It was significantly revealed in this study that the training of CCGMPs was inadequate because they were generally trained for a very short duration of time both theoretically and practically and not as recommended by the curriculum. Even though from the cross sectional survey, most CCGMPs indicated that most of the topics were covered during training, the extent to which these topics were covered is questionable due to the limited time. Although findings indicate that a variety of methods were used during the training, the full benefit of the learners, learning from these methods was also questionable due to the limited time of training. But again most of these CCGMPs were trained for other roles other than GMP, within the short duration meaning that they were also learning other skills at the same time. This could have jeopardized their learning on GMP as they had competing attention and concentration. This finding is in line with a study which concluded that; "Health service delivery programs use minimally-trained community-based health workers (CHWs) have been established in many developing countries in recent years. This is in order to improve the cost-effectiveness of health care systems by reaching large numbers of previously underserved people with high-impact basic services at low cost. However, the programmes to deliver these interventions are too often patchy, low quality, inequitable, and short-lived [16].

The curriculum and training for CCGMPs can be accompanied with different incentives that can be offered to them, in addition to training and supervision. Examples of different incentives as indicated by the respondents may include; refresher courses protective clothing, uniforms or badges for identification and community recognition, bicycles to reach far distances, provision of medical-surgical supplies as needed, and recognition for their important work. This finding is complimented [17], when he writes that in addition to training and supervision, different incentives like travel stipends to reach clients' homes, IGA training to support CHWs' volunteerism, bicycles to reach far distances, uniforms or badges for identification and community recognition, replenishment of CHBC kit supplies as needed, and recognition of CHWs for their important work [18].

The practice of the CCGMPs has been mainly affected by their training as well as by many other factors as indicated in the findings from this cross sectional survey.

Table 9: Demographic variables and adequate training

Variable		Proportion	A OR 95% CI
Place of data collection	Urban	68%	2.0; 95%CI (0.6, 6.6)
	Rural	32%	
Age range	≤40yrs	34%	1.1; 95%CI (0.3, 4.2)
	>40yrs	68%	
Educational Level	Secondary	73%	3.2; 95%CI (1.0, 10.1)
	Primary	27%	
Marital Status	Married	84%	1.2; 95%CI (0.2, 6.1)
	Single	16%	
Source of Income	Self-Employment	71%	0.5; 95%CI (0.1, 2.1)
	Formal Employment	29%	
Org. which Trained	NGO/FBO	73%	0.5; 95%CI (0.1, 1.5)
	Gov. DHMT	27%	
Trained as	No GMP content	15%	0.2; 95%CI (0.0, 0.9
	GMP content	85%	

Significantly in addition to the inadequate training, the

CCGMPS are faced by numerous challenges of practice including; poor surveillance, lack of recognition from authorities, lack of motivation, lack of medical supplies, lack of supervision and lack of infrastructure logistics mainly and the over whelming numbers of children that the CCGMPs can hardly cope with for them to effectively deliver the growth monitoring services to the children. Similarly [19] emphasized that although good coverage has been shown in community-based GMP there are still other important factors that need to be considered for appropriate implementation of GMP including training of community health workers.

Conclusion

Community health workers (CHWs) including CCGMPs are increasingly recognized as a critical link in improving access to services and achieving the health-related Strategic Development goals. Due to financial and human resources constraints in developing countries, this cadre of health workers are key players and are expected to do more and yet they do not necessarily receive the needed training and support to acquire the needed skills and competencies so that they can perform their duties as expected. This study proves that CCGMPs were inadequately trained, despite them making great contribution (97%) towards monitoring of the Zambian children. This could be a major contributor their poor performance in implementing services, consequently leading to persistently high infant and child mortality rates.

References

1. Adebayo SB. Modelling childhood malnutrition in Zambia: an adaptive Bayesian splines approach. Statistical Methods and Applications. 2003 Dec 1; 12 (2):227-41.
2. Anderson P, Basin D. Program development schemata as derived rules. Journal of Symbolic Computation. 2000 Jul 1; 30 (1):5-36.
3. Bowling Mzuri, A. [2002] Research Method sin Health Investigating Health and Health Service. 2nd edition. Philadelphia: Open University Press
4. Bruce B, McGrath P. Group interventions for the prevention of injuries in young children: a systematic review. Injury Prevention. 2005 Jun 1; 11 (3):143-7.
5. Charlton KE, Kawana BM, Hendricks MK. An assessment of the effectiveness of growth monitoring and promotion practices in the Lusaka district of Zambia. Nutrition. 2009 Oct 31; 25 (10):1035-46.
6. Central Board of Health CBoH[2001]Final Child Health Situation Summary Zambia. Lusaka:CBoH
7. Central Statistical Office, [2011] Zambia 2010 Census of Population and Housing, Lusaka: CSO
8. Central Statistical Office (CSO), Ministry Of Health (MOH), Tropical Diseases Research Centre (TDRC), University of Zambia (UNZA) [2009]
9. Cesar C, Shepherd BE, Krolewiecki AJ, Fink VI, Schechter M, Tuboi SH, Wolff M, Pape JW, Leger P, Padgett D, Madero JS. Rates and reasons for early change of first HAART in HIV-1-infected patients in 7 sites throughout the Caribbean and Latin America. PLoS One. 2010 Jun 1;5(6):e10490.
10. Faber M, Phungula MA, Kvalsvig JD, Benadé AS. Acceptability of community-based growth monitoring in a rural village in South Africa. Food and Nutrition Bulletin. 2003 Dec 1; 24 (4):350-9.
11. Griffiths M, Rosso JD. Growth monitoring and the promotion of healthy young child growth: evidence of effectiveness and potential to prevent malnutrition. Washington, DC: Manoff Group. 2007 Nov: 36.
12. Jaskiewicz W. and Tulenko K, [2012] Human Resources for Health 201210:38; DOI: 10.1186/1478-4491-10-38, BioMed Central Ltd.
13. Johansson M, Nyirenda JL, Johansson A, Lorefält B. Perceptions of Malawian nurses about nursing interventions for malnourished children and their parents. Journal of Health, Population and Nutrition. 2011 Dec 1:612-8.
14. Kadum, K. Hilfy Y. Al and Essa A. [2007] Mother's knowledge and attitude regarding childhood survival. Iraq: Middle East Journal of Family medicine Volume 5 Issue 1.
15. Katepa-Bwalya, M. [2006] Feeding Practices and Nutritional Status of Infants and Young Children in Mazabuka and Kafue districts in Zambia. Lusaka: University of Zambia
16. Levy PS, Lemeshow S. Sampling of populations: methods and applications. John Wiley & Sons; 2013 Jun 7.
17. Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, Rudan I, Campbell H, Cibulskis R, Li M, Mathers C. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. The Lancet. 2012 Jun 15; 379 (9832):2151-61.
18. LoBiondo-Wood G, Haber J. Nursing research: Methods and critical appraisal for evidence-based practice.
19. Lotfi M. Growth monitoring: A brief literature review of current knowledge. New Delhi:Public health nutrition
20. Mangasaryan N, Arabi M, Schultink W. Revisiting the concept of growth monitoring and its possible role in community-based nutrition programs. Food and nutrition bulletin. 2011 Mar;32(1):42-53.
21. Mariam Claeson, Charles C. Griffin, Timothy A. Johnston, Milla Zambia Demographic and Health Survey 2007. Lusaka, Calverton, Maryland: CSO and Macro International Inc
22. McLachlan, Agnes L. B. Soucat, Adam Wagstaff and Abdo S. Yazbeck [2001] Poverty-Reduction and

the Health Sector; The Health, Nutrition and Population Network's Chapter in the World Bank's Poverty Reduction Strategy Sourcebook; ISBN 1-932126-39-2, The International Bank for Reconstruction and Development / The World Bank, 1818 H Street, NW Washington, DC 20433

23. Mason J. [2006] DOI: 10.1177/1468794106058866. Mixing Methods in A Qualitatively driven way. Warwick Coventry: Glacier2008 978-92-806-4247-6
24. Ministry of Health (Uganda), USAID'S Basics II and Uphold Projects [2005] Training Guide for Training the Trainers of Community-Based Child Growth Promoters (TOT Guide) Geneva: The Manoff Group
25. Ministry of Health Zambia [2000] The National Food and Nutrition Policy Lusaka: MOH
26. National Food and Nutrition Commission (NFNC) and Ministry of Health (MOH) (2002): Curriculum for Nutritionists. Lusaka
27. Pino A, Albán M, Rivas A, Rodríguez E. Maternal deaths databases analysis: Ecuador 2003-2013. Journal of public health research. 2016 Aug 19; 5 (2).
28. PolitD. F. And Beck C. T. [2006] Essentials of Nursing Research:Methods, Appraisal, and Utilizatio. Volume.1 Lippincott Williams & Wilkins
29. Rohde, J. (2005) Going For Growth.ISSN: 1606-0997 EISSN: 2072-1315, Vol. 23 The Journal of Health, Population and Nutrition
30. Serinaetb al(2003) A community-based growth monitoring model tocomplement facility-based nutrition and health practices ina semi-urban community in South Africa
31. UNICEF (2011) Malnutrition prevalence; weight for age (% of children under 5) in Zambia. Lusaka: UNICEF
32. Wright C.M. and Huston K. (2007) SBN 9780112432807. Application of WHO Growth Standards in the UK, United Kingdom: The Stationery Office (TSO) N5909109 C20 10/09
33. World Health Organisation (WHO) (2007). Country Health System Fact Sheet 2006 Zambia, Geneva: WHO Regional Office for Africa