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Original Article

Are LHWs Equipped Enough to Detect Malnutrition in Under-5 Children? A KAP Survey of District Rawalpindi

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Abstract

Background: Malnutrition remains one of the major problems in developing countries including Pakistan. Despite raised awareness, there is little improvement in nutrition indicators in Pakistan, which calls for identification of the causes of stagnant rates.
Objectives: To assess the proficiency of lady health workers (LHWs) to detect malnourishment in under-5 children using Salter scales and growth charts.
Study design, settings and duration: Cross sectional study done in district Rawalpindi from May to August 2013.
Subjects and Methods: Knowledge and skills of 59 LHWs related to growth charts were determined by cross-sectional method; and availability of tools were assessed by a short survey in district Rawalpindi.
Results: None of the LHWs had growth chart while Salter-weighing scale was available with 34 (57.6%). In knowledge assessment 78.8% LHWs scored good marks (above 80%) while 19.2% scored average (60-79% marks). Skills of LHWs related to child weighing were satisfactory but major deficiencies were noted regarding hanging the Salter-scale to stable support and tarring the scale-needle to zero reading.
Conclusion: For timely identification of malnutrition in children, availability of Salter-weighing scales and growth charts must be ensured with the LHWs.
Policy message: LHWs trainings should be updated with frequent trainings and refresher courses. They should be provided with updated materials like charts for Weight-for-Height and Mid-Upper Arm Circumference (MUAC) measuring tapes.
Key words: Lady health workers, under-5 nutrition, malnutrition, growth charts, severe acute malnutrition.

Introduction

According to Pakistan Demographic and Health Survey (PDHS) 2012-13, malnutrition is one of the main causes of mortality in under-5 children. The PDHS shows that the health indicators for malnutrition i.e. rates of stunting, wasting and under-weight have only slightly improved over the decades. Efforts should be focused to identify the causes of these stagnant rates[1-6]. Growth monitoring of under-5 children should be conducted routinely every month up to the age of 5 years and record plotted[7].

For last two decades, growth charts are being used to measure nutritional status of children. For growth monitoring, growth charts and Salter - weighing scales should be available and functional as non availability of these tools make it difficult to accurately assess nutritional status of under-5 children[8-10].

Approximately 120,000 LHWs are employed under Lady Health Workers Program (LHWP), who serve approximately 85% of the rural population of Pakistan. The Federal LHW Program unit is responsible for the trainings, procurement and quality control of the program. At the community level, these LHWs perform growth monitoring of under-5 children and report the children with malnutrition in their monthly reports. The work of these LHWs is supported by the Primary Health Centers. Children identified by the LHWs to be suffering from malnutrition are referred to Medical officer of the Primary Health Center, who is also the in charge of the LHWs.

Post 18th Constitutional Amendment, all the administrative, financial and managerial functions of LHWs program were decentralized to the Provinces and the Federal program implementation unit was abolished.

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All trainings, procurement and quality control were transferred to the Provinces. In this backdrop, the current study was conducted to review the competence of LHWs in detecting malnutrition, and to assess the knowledge of LHWs to the use of growth charts and Salter weighing scales.

The rationale of this study was to asses if LHWs can detect malnutrition with a weight-for-height growth chart, for which they are trained. Weight-for-age growth chart is considered to be a stronger screening tool for detecting malnutrition in under-5 children[11] and that is why it has been incorporated in LHW training curriculum.

Subjects and Methods

This study was conducted from May 2013 to August 2013, at three randomly selected union councils (UCs) (UC Guff, UC Kallar, UC Darkali) of tehsil Kallar-Syedan of district Rawalpindi. As urban areas have lesser issues in terms of availability of supplies (growth charts and weighing scales) than the rural areas, therefore the study was conducted in urban area. A total of 59 LHWs who fulfilled the inclusion criteria of working in field for 6 or more months were enrolled for the study. All of the 59 LHWs belonged to urban setting.

Telephonic survey and knowledge assessment was conducted from all LHWs. Only those LHWs who possessed Salter weighing scales were approached for field observations. On average four LHWs from each union council were randomly selected using a computer-generated random number table to participate in field observation activity.

For skills assessment, a field observation checklist was constructed after review of the "Lady Health Workers Program Manual" developed by "Lady Health Workers Program – Ministry of Health – Government of Pakistan 2008" [12]. The checklist was pre-tested and appropriate changes were made in accordance with the given feedback. After obtaining verbal and written consent from the LHWs, the researcher accompanied her to one of the household in her assigned area which had at least one child aged under-5 years. Verbal consent to participate in the study was obtained from the family after explaining the study objectives. LHW's performance was recorded on the observation checklist tool. Eleven field observations were conducted in similar manner.

A scoring system was developed to grade the performance of LHWs, as: "Excellent" (85-100% score), "Good" (75-84% score), "Above Average" (65-74% score), "Average" (50-64%) and "Below Average" (below 50% score). In order to derive the percentages for grading purpose, number of steps followed by each LHWs were divided by the total number of steps mentioned in checklist tool.

Knowledge of LHWs to the basic concept of growth charts was assessed by semi-structured questionnaire which was developed as multiple-choice-questions, with 4-5 response options against each question. A scoring system was devised to grade knowledge of LHWs as "Good" (for score of 80% and above), "Satisfactory" (for score of 60-79%) and "Unsatisfactory" (for score less than 60%). Each correct response to multiple choice questions was designated 1 mark and 0 marks were designated to incorrect response. Urdu version of self-administered knowledge assessment questionnaire was developed and finalized after pre-testing.

The checklist data was entered and analyzed by using SPSS version 16.0. Descriptive statistics were performed in analysis and results were derived as frequencies, percentages and graphs.

The LHWs were provided the questionnaire along with consent forms and an hour was provided to the participants for signing the consent forms and completing the questionnaire.

Results

A total of 59 LHWs were shortlisted for the self-administered knowledge assessments at their respective Basic Health Units (BHU's). Seven LHWs were absent, therefore the final sample comprised of 52 LHWs. Their ages ranged from 21 – 55 years with a mean of 38.5 ± 3.4 years. Other demographic characteristics are summarized in Table-1. Salter weighing scale was available with 34/52 (65.3%) of LHWs, while growth charts were not available with any of the LHW (Figure-1).

Field observations were completed for 11 randomly selected LHWs. All LHWs were fully trained with a working experience of at least 6 months in field and had at least one or more refresher-trainings.

Table 1: Demographic characteristics of lady health workers who participated in knowledge assessment activity.

Demographic Characteristics of Participants (n = 52)		
Characteristics	*Sub-classes*	*N (%)*
Union council	Guff Ghazanabad	21 (40)
	Darkali	14 (26.9)
	Kallar	17 (32.7)
Marital status	Unmarried	3 (5.8)
	Married	48 (92.3)
	Widowed	1 (1.9)
Age (years)	20-30 s	6 (11.5)
	31-40	24 (46.2)
	41-50	20 (38.5)
	>50	2 (3.8)
Experience (years)	1-5	10 (19.2)
	6-10	14 (26.9)
	11-15	12 (23.1)
	16-20	16 (30.8)

Table 2: Summary of outcomes in skills assessment of LHWs (n=11).

Summary of Outcomes in Skills Assessment		
Sections in Tool	*Elements*	*Score(%)*
Entering the household	Greets the family	(11/11) 100
	LHW has a friendly exchange with the mother	(9/11) 81.8
	LHW asks how the mother is	(9/11) 81.8
	LHW asks how the child is	(9/11) 81.8
	Shows she is listening to mother	(9/11) 81.8
	Tells the purpose of her visit to mother	(4/11) 36.3
Working with weighing scales and growth chart	*Measuring weight of child;*	
	Hang salter scale to stable support	(4/11) 36
	Tare scale to zero reading prior to placing child	(3/11) 27
	Ask mother to stand close by the child	(8/11) 72
	Remove un-necessary clothes of child	(7/11) 63.6
	Read the reading quickly	(10/11) 90
	Successfully read reading	(10/11) 90
	Recording weight on growth chart;	
	3.7 Record the weight immediately	(9/11) 82
	3.8 No other child weighed before recording weight of previous child	(10/11) 90
	3.9 Record weight in grams and kilograms	(11/11) 100
	3.10 Fill growth chart on the spot	(0/11) 0
	3.11 Mark the dot at correct place on growth chart	(0/11) 0
	3.12 Draw growth line	(0/11) 0
	3.13 Interpret growth line	(0/11) 0

Section wise results are shown in Table-2. Only 4/11 (36%) LHWs hung the weighing scale to a stable support parallel to their eye level and 3/11 (22.2%) remembered to tare the scale before weighing the child. The last section of observation checklist was interpretation of "growth line" constructed by LHW on growth chart. However, due to unavailability of growth charts with the LHWs this section was marked as "Growth charts not available".

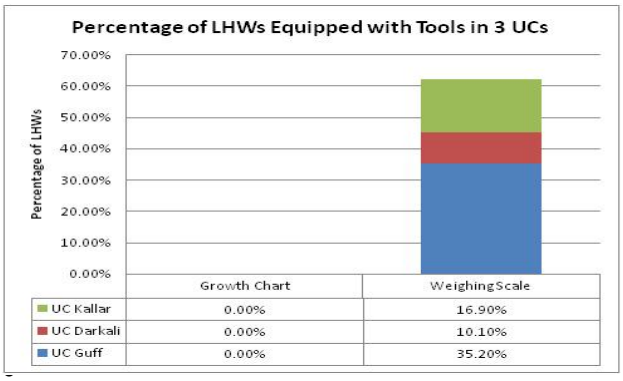

Figure 1: Percentage of LHWs equipped with two basic tools i.e. growth chart and salter weighing scales.

The knowledge assessment questionnaire was completed by all LHWs. Almost 41/52 (78.8%) had "Good" basic knowledge of growth charts, 10/52 (19.2%) had "Satisfactory" knowledge, while only 1/52 (1.9%) LHW had "Unsatisfactory" knowledge.

Last component of knowledge assessment questionnaire was related to some commonly used malnutrition of various forms. Four methods were mentioned in questionnaire including: Mid-upper arm circumference (MUAC), Weight-for-height, Weight-for-age, and Height-for-Age. Weight-for-age measurement method was known by 35/52 (67.3%), mid-upper arm circumference measurement method was known by 14/52 (26.9%) and 9.6% (5/52) knew height-for-age measurement method for malnutrition detection

Chi-square test showed no significant relation (p <0.277) between experience and percentage score obtained by LHW (Figure-2).

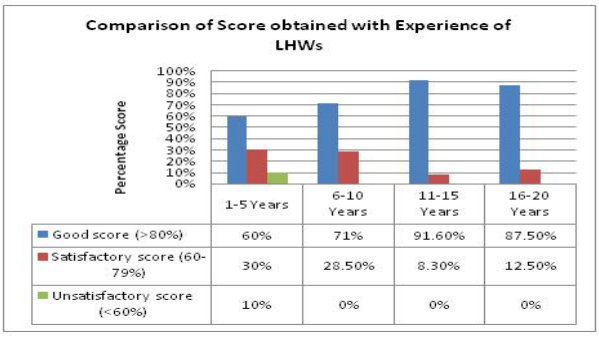

Figure 2: Comparison of Experience of LHWs in years with Percentage score obtained

Discussion

Lady Health Workers Program was initiated in 1994 as a community based Primary Health Care Program. LHWs work closely with the nationwide health infrastructure of Pakistan which comprises of thousands

of basic and rural health centers in the far flung marginalized communities[10]. LHWs are involved in growth monitoring of the children since the inception of the program, however, there hasn't been an improvement in the nutritional indicators of children[4].

Most researchers have reported that malnutrition is best dealt with community-based approach[13,14]. LHWs therefore, are pivotal to detect malnutrition at community level in Pakistan as they conduct home visits and are the first ones to notice children with malnutrition, even before the child gets sick and seeks medical advice from public or private health care providers. They refer the children with malnutrition to the medical officer at the primary health facility (or to the private health care provider, in case there is no medical officer at the primary health care facility), where they collect their monthly supplies and also hand over their monthly reports.

At the primary health care facility the medical officer is the in-charge of the LHW program. He along with the lady health supervisor (LHS) provides educational sessions on the skills and knowledge where the LHWs are weak. The training needs are identified by the LHWs/LHS to the the medical officer in-charge and/or the district or provincial level directors[15]. Therefore it is important to explore why the LHWP hasn't been able to improve nutrition related health indicators in Pakistan.

Evaluation of knowledge, attitude and skills of LHWs on maternal health, family planning, vaccinations and general infections has been conducted since the inception of LHWP in 1994[16,17]. Nutritional component of LHWP has not been explored adequately [4]. The results of the current study show that the LHWs possess adequate knowledge of growth charts. Similar results were reported by other worker[16]. Despite having adequate basic knowledge, the current study identifies lack of refresher trainings and absence of up-to-date information. In order to fill in the gaps, more frequent and rigorous refresher trainings must be provided to improve their knowledge and highlight the significance of nutrition assessment. Similar recommendation was given in another study by Haq[18].

Main finding of this study reflected the non availability of Salter-weighing scales and this was also highlighted previously as a major problem in Lady Health Workers Program[19]. Growth charts which are the primary tools to evaluate the nutritional status of children were not available with the LHWs in another study[20]. The 4th Lady Health Workers Evaluation report conducted by Oxford Policy Management identified non availability of medical supplies, equipments including growth charts, Salter-weighing scale, and clinical services for the LHWs[9].

During field observations the LHWs were seen to miss various crucial steps while weighing the children. This included failure to tare the scale to zero after hanging the weighing-bag, not removing un-necessary clothes, not hanging the Salter scale to stable support. Knowledge assessment of LHWs revealed that majority of them had good theoretical knowledge of these steps. One researcher reported that despite proper trainings, simpler tasks including growth monitoring, counseling, follow-up and health education are usually ignored by the LHWs[21].

LHWs are trained in assessing the growth by weight-for-age only. Despite being the best anthropometric measurement used to detect malnutrition, other methods like weight-for-height and mid arm circumference are said to have a better case detection rate[22]. Introduction of these methods to LHWs may lead to better detection of malnutrition without a need to add sophisticated instruments like weighing machines and other supportive measures. This needs revision of their training manual

After 18th Constitutional amendment, this is the first study which explored the proficiency of LHWs to detect malnutrition in under-5 children using growth charts. This study cannot be generalized due to small sample size from only one district of Punjab. However, the issues highlighted in this study were previously pointed out in the 3rd and 4th evaluation of LHWP, conducted by OPM, due to which it is plausible to assume that similar issues would be present in the rest of the country as well.

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Authors Contribution

MZ collected and interpreted the data as well as wrote the manuscript, RK conceived the idea, supported in design of study and did final proof reading of manuscript. SS supported in designing and supervising the study. TZ supported in writing the manuscript.

Conflict of interest: None declared.

References

1. Onis MD, Garza C, Onyango AW, Martorell R ed. WHO child growth standards. International journal of pediatrics. April 2006;95(suppl 450):5.
2. Ghosh S. Second thoughts on growth monitoring. Indian Pediatr 1993;30:449-53.

3. Collins S, Sadler K, Dent N, Khara T, Guerrero S, Myatt M, Saboya M, et al. Key issues in the success of community-based management of severe malnutrition. Food and Nutrit Bull 2006;27:49-79.
4. Summary results of 4th Evaluation of Lady Health Workers Program. Oxford Policy Management. October 2009.
5. Ramli, Agho KE, Inder KJ, Bowe SJ, Jacobs J, Dibley MJ. Prevalence and risk factors for stunting and severe stunting among under-fives in North Maluku province of Indonesia. BMC Peadiatrics 2009;9:64-73.
6. Grantham-McGregor S, Cheung YB, Cueto S, Glewwe P, Richter L, Strupp B. Developmental potential in the first 5 years for children in developing countries. The lancet 2007;369(9555):8-9.
7. Grummer-Strawn LM, Reinold C, Krebs NF; Centers for Disease Control and Prevention (CDC). Use of the World Health Organization and CDC growth charts for children aged 0-59 months in the United States. Recommendations and Reports. MMWR Recomm Rep 2010;59(9);1-15.
8. Kerac M. Improving the treatment of Severe Acute Malnutrition in Childhood: Randomized Controlled Trial of synbiotic-enhanced therapeutic food with long term follow-up of post-treatment mortality and morbidity: University College London. (Accessed on 15th October, 2015) Available from URL: http://discovery.ucl .ac.uk /1306755/
9. Black RE, Allen LH, Bhutta ZA, Caulfield LE, Onis Md, Ezzati M, et al. Maternal and child undernutrition: global and regional exposures and health consequences. The lancet. 2008;371:243–60
10. Maciocco G. [Alma Ata 30 years on. Evolution and perspectives of primary health care]. Ann Ig 2008;20:389-99.
11. M de Onis, A Onyango, E Borghi, A Siyam, Blossner M, Lutter C. Worldwide implementation of the WHO Child Growth Standards. Pub Health Nutrit 2012;15(09):1603-10.
12. Aqeel F, Khan ZU. National Program for Family Planning & Primary Health Care: Lady Health Workers Manual. Islamabad: May 2008.
13. Guest JF, Panca M, Baeyens JP, Man FD, Ljungqvist O, Pichard C et al. Health economic impact of managing patients following a community-based diagnosis of malnutrition in the UK. Clin Nutrit 2011;30(4):422-9.
14. Wilford R, Golden K, Walker DG. Cost-effectiveness of community-based management of acute malnutrition in Malawi. Health Policy and Planning 2012;27(2):127-37.
15. Lady Health Workers. National program for family planning and primary health care Pakistan. (Accessed on 15th October, 2015) Available from URL:http://lhwp.punjab.gov.pk/website/Introduction.aspx?id=12 and http://www.pc.gov.pk/downloads/pc1-forms_vertical-healthprogram/National%20Program%20for%20Family%20Planning.pdf
16. External Evaluation Report. National Program for Family Planning and Primary Health Care. Oxford Policy Management, March 2002.
17. Arif GM, Nayab D, Farooq S, Nazir S, Satti MN. Welfare Impact of the Health Intervention in Pakistan: The Case of Lady Health Workers Program. Pakistan institute of development economics Islamabad. Poverty and social dynamics paper series 7, 2012.
18. Haq Z, Hafeez A. Knowledge and communication needs assessment of community health workers in a developing country; a qualitative study. Human Resource for Health 2009;7:59.
19. Khan MH, Saba N, Anwar S, Baseer N, Syed S. Assessment of knowledge, attitude and Skills of lady health workers. Gom J Med Sci 2006; 4(2):57-60.
20. Syed SSM, Muhammd S, Butt ZK. Nutritional Assessment of Children under the Age of Sixty Months in District Sialkot, Pakistan. J Pak Med Stud 2011; 1(1): 7-12.
21. Jaskiewicz W, Tulenko K. Increasing community health worker productivity and effectiveness: a review of the influence of work environment. Hum Resour Health 2012;10:38.
22. Mogeni P, Twahir H, Bandika V, Mwalekwa L, Thitir J, Ngari M et al. Diagnostic performance of visible severe wasting for identifying severe acute malnutrition in children admitted to hospital in Kenya. Bulletin of the 2011;89(12):900-6.