pISSN 2394-6032 | eISSN 2394-6040

Original Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20163937

Cross-sectional comparative study of the effect of refresher training on the knowledge, attitude and practices of urban primary health care providers

Aniruddha A. Malgaonkar*, Sundaram Kartikeyan

Department of Community Medicine, Rajiv Gandhi Medical College, Kalwa, Thane-400605, Maharashtra, India

Received: 07 September 2016 **Accepted:** 04 October 2016

*Correspondence:

Dr. Aniruddha A. Malgaonkar, E-mail: andydr@rediffmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Primary health care providers, who cater to the basic health care needs in urban and rural areas, ought to have the basic knowledge and a positive attitude in relation to the services they deliver. This cross-sectional, complete-enumeration, before-and-after study was conducted to determine the outcome of refresher training on the knowledge, attitudes and practices of auxiliary nurse midwives (ANMs), and link workers (LWs) in an urban area in Western India.

Methods: Each willing participant answered a structured pre-test questionnaire containing 25 questions in the local language (Marathi), following which, Government-approved refresher training (3 days for ANMs and 1 day for LWs) was conducted in the same language. The participants took the same questionnaire after the refresher training (post-test). The pre- and post-test scores were tabulated and statistically analysed.

Results: In case of ANMs (n=60), the post-test scores (mean=20.7; SD=1.8) improved over the pre-test scores (mean=17.5; SD=2.76). The LWs (n=170) also bettered their post-test scores (mean=20.9; SD=2.52), over their pre-test scores (mean=14.4; SD=4.41). The degree of improvement in scores varied from marginal to statistically significant.

Conclusions: Though the post-test results were encouraging, sustained efforts would be required to bring about the desired attitudes and practices. As a consequence of the widespread use of mobile phones, it is possible to conduct periodic refresher training through mobile phones at a much lower cost.

Keywords: Healthcare personnel, Healthcare providers, In-service training, Knowledge attitudes and practices

INTRODUCTION

Primary health care providers cater to the basic health needs of people in urban and rural areas and endeavour to provide critically needed outreach services in urban slums and remotest villages. For providing credible and good quality services to those in need, it is imperative that these primary health care providers have the basic knowledge and a positive conducive attitude regarding the services they deliver. Urban health posts (UHPs), launched under the Urban Revamping Scheme to provide

primary health care in urban slums, are staffed by auxiliary nurse midwives (ANMs), also known as multipurpose health workers (female), who are trained paraprofessional health care providers and function as the first contact between the community and the formal health care system.

Link workers (LWs) are primarily female volunteers from local communities, who identify high-risk groups and mobilise vulnerable and inaccessible sub-groups in the community. Various studies have emphasized the need for induction training and re-training for ensuring adequate awareness and safe practices in health care settings. ¹⁻⁵ Not only do they need this knowledge to work efficiently in the field they also need that to protect themselves from a gamut of occupational diseases. Injuries due to needle-sticks and sharps have been tagged as the main occupational hazard for health care personnel. ⁵

The present study was conducted to study the effect of refresher training on the knowledge, attitudes and practices of primary health care providers in an urban area in Western India.

METHODS

This cross-sectional, before-and-after complete enumeration comparative study was conducted to study the effect of refresher training on the knowledge, attitudes and practices of Auxiliary Nurse Midwives (ANMs) and Link Workers (LWs) working in Urban Health Posts (UHPs) in an urban area in Western India. A refresher training programme (3 days for ANMs and 1 day for LWs), approved by the Ministry of Health and Family Welfare, Government of India, was conducted for ANMs working for 5 years or more and LWs working for 3 years or more.

After obtaining permission from institutional authorities and the Institutional Ethics Committee for conducting the study, participants who gave written informed consent to participate in the study, were subjected to a structured questionnaire (pre-test) that comprised 25 questions each in the vernacular language (Marathi). This refresher training was also conducted in the Marathi language and included topics such as, reproductive and child health, routine immunisation, infant and young child nutrition and integrated management of neonatal and childhood illnesses. These participants were then subjected to the same questionnaire after the refresher training (post-test).

The pre- and post-test scores were tabulated and statistically analysed using EpiInfo Version 7.0 (public domain software package from Centre for Disease Control and Prevention, Atlanta, GA, USA). Statistical significance of difference (taken as p-value<0.05) was calculated using Karl Pearson's Chi-square test (with *Mantel-Haenszel* correction where applicable). Confidence interval (CI) was stated in the range of {Mean + (2 x Standard Error)} to [Mean - (2 x Standard Error)}.

RESULTS

A total of 60 ANMs and 170 LWs participated in the pretest, refresher training, and post-test. The joint exposure of all the participants to the same set of facilitators (subject experts) for refresher training and to identical pre-and post-test questionnaires would invalidate the likely consequences of confounding variables.

Table 1: Analysis of pre- and post-test scores of ANMs (N=60).

Question topic	ANMs: Correct responses				
	Pre-	Post-	Chi ² -	p-value	
	test	test	value #		
STD prevention	52	58	3.89	0.048*	
Contraception	41	59	19.27	0.00001*	
(Copper-T)					
Routine	41	49	2.84	0.09	
immunisation					
Routine	56	58	0.696	0.404	
immunisation					
management	44	20	0.077	0.222	
Emergency	44	39	0.977	0.323	
contraception Contraception	33	44	4.385	0.036*	
(oral pills)	33	44	4.363	0.030	
Universal	47	58	9.142	0.002*	
Precautions	7/	36	7.172	0.002	
Routine	28	58	36.62	0*	
immunisation			20.02	ŭ	
management					
Contraception	45	59	14.02	0.0002*	
(medical					
eligibility)					
Emergency	34	25	2.7	0.1	
contraception					
STD treatment	50	57	4.192	0.041*	
National Anti-	41	42	0.039	0.843	
malaria programme					
Water hygiene	23	36	5.63	0.017*	
Routine	41	47	1.53	0.215	
immunisation					
Routine	04	05	0.119	0.73	
immunisation					
Routine	58	59	0.339	0.56	
immunisation	20	2.5	1.01	0.05	
Routine	30	36	1.21	0.27	
immunisation					
management National anti-	51	60	9.65	0.002*	
malaria	31	00	9.03	0.002	
programme					
STD	52	58	3.89	0.048*	
IMNCI	40	60	23.8	0*	
ORS	49				
		56	3.70	0.054	
IMNCI	39	53	9.13	0.002*	
Male vasectomy	46	54	3.84	0.05	
IYCN	50	52	0.26	0.61	
Water disinfection	56	60	4.1	0.042*	

*Statistically significant; # Chi-square with Mantel-Haenszel correction (where applicable); ANM = Auxiliary Nurse Midwife; STD = Sexually transmitted disease; IMNCI = Integrated Management of Neonatal and Childhood Illnesses; IYCN = Infant and Young Child Nutrition.

Table 2: Analysis of pre-and post-test scores of LWs (n=170).

Question topic	uestion topic LWs: Correct responses					
	Pre-	Post-	Chi ² -	p-value		
	test	test	value			
STD prevention	155	167	8.422	0.003*		
Contraception	123	158	25.122	0*		
(Copper-T)						
Routine	76	113	16.31	0.00005*		
immunisation						
Routine	142	160	9.6	0.002*		
immunisation						
management	60	105	27.64	04		
Emergency	69	125	37.64	0*		
contraception	02	150	16.06	0*		
Contraception	93	150	46.86	0*		
(oral pills)	00	161	76.06	0*		
Universal	88	161	76.96	0*		
precautions Routine	51	147	111.45	0*		
immunisation	31	14/	111.43	0.		
management						
Contraception	108	150	28.35	0*		
(medical	100	130	20.33	U		
eligibility)						
Emergency	47	67	5.278	0.022*		
contraception	.,	0,	3.270	0.022		
STD treatment	108	169	72.28	0*		
National anti-	60	77	3.53	0.06		
malaria						
programme						
Water hygiene	43	137	104.31	0*		
Routine	42	147	131.35	0*		
immunisation						
Routine	35	61	9.182	0.002*		
immunisation						
Routine	159	164	1.543	0.214		
immunisation						
Routine	139	135	0.301	0.583		
immunisation						
management						
National anti-	105	158	47.16	0*		
malaria						
programme						
STD	137	160	14.08	0.0001*		
IMNCI	93	159	66.79	0*		
ORS	112	158	38.07	0*		
IMNCI	79	151	69.67	0*		
Male vasectomy	63	145	82.27	0*		
IYCN	160	164	1.049	0.305		
Water	160	165	1.735	0.187		
disinfection						

^{*} Statistically significant; # Chi-square with Mantel-Haenszel correction (where applicable); LW = Link Worker; STD = Sexually transmitted disease; IMNCI = Integrated Management of Neonatal and Childhood Illnesses; IYCN = Infant and Young Child Nutrition

Participant-wise scores (ANMs)

Out of a maximum score of 25 (one mark per question), the mean pre-test score was 17.5 with a standard deviation (SD) of 2.76 (CI = 20.26 - 14.74) while the mean post-test score was 20.7 with a SD of 1.8 (CI = 22.5 - 18.9). The lower value of SD in the post-test indicated reduced dispersion of the scores. The median correct responses as well as fourth quartile responses to the pre-and post-test questionnaires showed improvement.

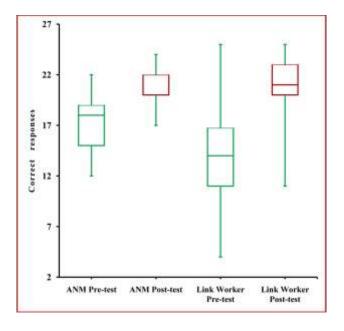


Figure 1: Box plot showing correct responses in pre- and post-tests.

Participant-wise scores (LWs)

The mean pre-test score was 14.4 with a SD of 4.41 (CI = 18.81 - 9.99) while the mean post-test score was 20.9 with a SD of 2.52 (CI = 23.42 - 18.38). As in the case of ANMs, the lower value of SD in the post-test indicates diminished dispersion of the scores.

Comparison of participant-wise scores (ANMs & LWs)

All the quartile scores showed improvements but there was no improvement in the maximum scores since the maximum score was the highest possible score in the pretest itself. The minimum scores increased with maximum improvements and the box plot for post-test (ANM) shows that the first quartile has merged with the median, which denotes overall improvement in scores (Figure 1).

Question-wise scores (ANMs)

The differences between the pre- and post-test scores were significant for responses to 13 out of 25 questions. These questions pertained to contraception, anti-malaria programme, universal precautions, Integrated Management of Neonatal and Childhood Illnesses

(IMNCI) and water hygiene. As compared to the pre-test, the number of correct responses increased in the post-test except in two questions (Question Nos. 5 & 10) on emergency contraception (Table 1).

Question-wise scores (LWs)

Significant differences were observed between pre- and post-test scores for responses to 20 out of 25 questions. These questions related to topics such as, sexually transmitted diseases, emergency contraception and routine immunization. The number of correct responses increased in the post-test except in one question (Question No. 17) on management of routine immunization (Table 2).

DISCUSSION

In the present study, ANMs improved their post-test correct responses (Table 1) to questions on sexually transmitted diseases while that of LWs (Table 2) showed statistically significant difference. However, some studies have reported significant gaps in knowledge and attitudes among paramedical staff in relation to HIV/AIDS.6-8 More than 50% of ANMs (Table 1) and LWs (Table 2) responded correctly in the pre-test and also showed significant improvement in their post-test scores in questions related to contraception and emergency contraception. However, low levels of awareness of emergency contraception have been reported among nursing staff, and nursing students. 9,10 Access to emergency contraception is restricted by provider-related obstacles, such as, inadequate knowledge, prejudices, and limited distribution.11

In the present study, ANMs showed marginal to significant improvement in their post-test responses to questions on routine immunisation (Table 1). However, the post-test responses of LWs showed statistically significant difference in five out of six questions pertaining to routine immunisation (Table 2). Studies have reported that paramedical field workers, such as ANMs, were the main source of information regarding immunisation. ^{12,13}

In relation to questions on anti-malaria program, both ANMs and LWs showed marginal improvement in their post-test responses to question No. 12. However, in relation to question No. 18 on the same topic, both ANMs and LWs showed statistically significant improvement in their post-test responses (Tables 1 and 2). Studies have reported that community health workers were among the main sources of health information on malaria and that mass media (including television and radio) advertisement, workshops and seminars, and other health workers were among the sources of information on malaria. ^{14,15}

As regards universal precautions, more than 50% of ANMs and LWs responded correctly in the pre-test and

also showed significant improvement in their post-test scores (Tables 1 and 2). Induction training has been found to increase the awareness about and practice of personal protective devices, biomedical waste management, and post-exposure prophylaxis. Among paramedical workers, low levels of observance of hand washing and inadequate awareness of universal standard precautions, post-exposure prophylaxis, biomedical waste, HIV and hepatitis B have been reported. 4.6,14-18

On questions pertaining to Integrated Management of Neonatal and Childhood Illnesses (IMNCI), Infant and Young Child Nutrition (IYCN) and Oral rehydration solution (ORS), nearly 50% of both ANMs and LWs responded correctly in the pre-test and also showed significant improvement in their post-test scores. (Tables 1 and 2) Other researchers²⁰⁻²² have reported lack of awareness among paramedical staff on various aspects of neonatal and child care.

Limitations of this cross-sectional study were that ANMs and LWs who attended the refresher training had been working for 5 years or more and 3 years or more, respectively. Due to the nature of this study, their present levels of knowledge, attitude and practice could not be compared with that at the time of induction.

CONCLUSION

Though the post-test results were encouraging, sustained efforts would be required to bring about the desired attitudes and practices. By deploying multiple information sources, precise health-based messages can be disseminated to the concerned health workers. Due to the widespread use of mobile phones, it is possible to conduct periodic refresher training through mobile phones at a much lower cost, as compared to traditional refresher training in classroom settings.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- 1. Goswami HM, Soni ST, Patel SM, Patel MK. A study on knowledge, attitude and practice of laboratory safety measures among paramedical staff of laboratory services. Natl J Community Med. 2011;2(3):470-3.
- 2. Bhandari SR, Rairikar SV. Knowledge and attitude of paramedical staff and hospital support staff regarding hospital infection control. J Cont Med A Dent. 2016;4(1):31-5.
- 3. Sachan R, Patel ML, Nischal A. Assessment of the knowledge, attitude and practices regarding Biomedical Waste Management amongst the medical and paramedical staff in tertiary health care centre. Int J Sci Res Pub. 2012;2(7):1-6.

- 4. Acharya R, Sharma G, Sethia R, Meena R. A cross sectional study amongst paramedical workers and nursing students regarding awareness of various aspects of Biomedical Waste (Management and Handling) Rules. Int J Community Med Public Health. 2016; 3(1):303-8.
- 5. Sangeetha Lakshmi G, Bhat R. A study on awareness of needle sticks injury in students undergoing paramedical course. IOSR-JDMS. 2015;14(11)Ver.VII:34-8.
- 6. Rairikar SV, Bhandari SR. Knowledge and attitude of paramedical staff and hospital support staff towards HIV infection. J Cont Med A Dent. 2016;4(1):36-40.
- 7. Gupta N, Goswami B, Singh B, Ghosh S. Awareness about HIV infection among the paramedical staff in a tertiary care hospital in Delhi, India. Clin Pract. 2012;2(1):e13.
- 8. Siddiqi S, Saeed Khan M, Majeed SA. Knowledge, attitude and practice survey of acquired immune deficiency syndrome (AIDS) among paramedicals in a tertiary care hospital in Pakistan. J Pak Med Assoc. 1995;45(8):200-2.
- 9. Rahaman H, Renjhen P, Kumar A, Pattanshetty S, Sagir A, Dubey H. A study on Emergency Contraceptive practice among nursing staff in Sikkim, India A cross sectional study. AMJ. 2010;3(10):667-71.
- 10. Kaveri SB, Suryawanshi JV. Awareness of Emergency Contraception among nursing students. Sch J App Med Sci. 2015;3(1E):306-9.
- 11. Williams K. Provider-related barriers to accessing emergency contraception in developing countries: A literature review. Washington, DC: Population Council. 2011:1.
- 12. Dutta PK, Das JK. Training of para-medical workers for rural health services in India: Challenges and Issues. Indian J Prev Soc Med. 2008;39(1&2).
- 13. Nath B, Singh JV, Awasthi S, Bhushan V, Kumar V, Singh SK. KAP study on immunization of children in a city of North India A 30 cluster survey. Online J Health Allied Scs. 2008;7(1):2.
- 14. Shimaponda-Mataa NM, Tembo-Mwase E, Gebreslasie M, Mukaratirwa S. Knowledge, attitudes and practices in the control and prevention

- of malaria in four endemic provinces of Zambia. S Afr J Infect Dis. 2016;1(1):1-11.
- 15. Umeano-Enemuoh JC, Uzochukwu B, Ezumah N, Mangham-Jefferies L, Wiseman V, Onwujekwe O. A qualitative study on health workers' and community members' perceived sources, role of information and communication on malaria treatment, prevention and control in southeast Nigeria. BMC Infect Dis. 2015;15:437.
- Devaliya JJ, Brahme K, Shringarpure K. A study on Knowledge, Attitude and Practice (KAP) of universal precautions in the nursing staff of tertiary care hospital. Sch J App Med Sci. 2016;4(7A):2368-71.
- 17. Bakry SH, Mustafa AF, Eldalo A, Yousif M. Knowledge, attitude and practice of health care workers toward Hepatitis B virus infection, Sudan. Int J Risk Saf Med. 2012;24(2):95-102.
- 18. Alam M. Knowledge, attitude and practices among health care workers on needle-stick injuries. Ann Saudi Med. 2002;22(5-6):396-9.
- 19. Siraj F, Fareed P, Mahajan N. Assessment of knowledge attitude and practice towards hepatitis B among health care workers in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol. 2016;5(1):58-61.
- 20. Girish B, Rajanna MS, Tharin SK, Afshan OUA, Garg B, Priyanka. Practice of breast feeding and infant feeding among female paramedical workers of Tumkur, Karnataka. Int J Biol Med Res. 2013;4(3):3364-8.
- 21. Okolo SN, Ogbonna C. Knowledge, attitude and practice of health workers in Keffi local government hospitals regarding Baby Friendly Hospital Initiative (BFHI) practices. Eur J Clin Nutr. 2002;56(5):438-41.
- 22. Choudhary SP, Bajaj RK, Gupta RK. Knowledge, attitude and practices about neonatal hypothermia among medical and paramedical staff. Indian J Pediatr. 2000;67(7):491-6.

Cite this article as: Malgaonkar AA, Kartikeyan S. Cross-sectional comparative study of the effect of refresher training on the knowledge, attitude and practices of urban primary health care providers. Int J Community Med Public Health 2016;3:3207-211.