

Training Effectiveness and Its Process Management in Public Health Institutions of Tigray Region, Northern Ethiopia

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Abstract

Background

Trainings impart health professionals' knowledge and skill competencies and improve service quality if it aimed at addressing identified performance gaps and resolved obstacles that reduce its effectiveness. This study assessed effectiveness of trainings conducted in 2017 and its process management in health institutions of Tigray.

Method and Materials

This cross sectional study was conducted among 357 health professionals from 53 public health institutions of Tigray, Ethiopia from March to May 2018. Training effectiveness was assessed using Kirkpatrick's method. Descriptive statistics was used to analyze the data.

Result

The absence of institutional training policy and training committee was indicated by 54% and 64% of the respondents, respectively.

IJOBAS

Accepted 27 March 2020
Published 30 April 2020
DOI: 10.5281/zenodo.3817642

Mean effect size of training effectiveness in terms of trainees' reactions, learning, and behavior criteria was 0.74. The priority barriers of training knowledge transfer were retentive capacity and work overload of trainees.

Conclusion

In conclusion, the level of effectiveness of trainings provided was medium effect size. Conducting coordinated trainings, on-the-job mentorship are lacking. Knowledge and skills gained, performance improved, and effect of performance on services delivery requires further consideration. We recommend periodic need assessments, evaluation of training programs, and institutionalizing training procedures.

Keywords: Training, effectiveness, process management, barriers, Training effectiveness,

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Introduction

Training is the systematic application of formal processes to impart knowledge, skill and attitude to help workers acquire requisite skills and competencies to perform their jobs satisfactorily [1]. This strategy improves productivity and efficiency in a rapidly changing work environment, and as health care workers provide crucial life-saving services, their value could be enhanced by investing time and money in their improvement [2, 3]. Trainings should aim at addressing identified performance gaps, and should therefore be based on the need to close performance gaps; and it should be evaluated for the outcomes to ensure investments are worthwhile [4].

In many low-income countries, despite substantial efforts and investment made, knowledge and skill gaps among health care workers continue to plague the health care sector [5]. Besides, training programs face with many obstacles that reduce its effectiveness and positive reactions of trainees [6], and health professional training initiatives have been limited by narrow focus on a specific set of diseases, inefficient utilization of funds, inadequate scale-up, insufficient emphasis on practical skills, poor alignment with local priorities, and lack of coordination [7].

Recent literatures declare that audience, message, delivery method, deliverer, and effects evaluation should be considered when planning training session and knowledge transfer. The factors that enable knowledge transfer include- creating a positive organizational culture, establishing knowledge producers and users partnerships [8]. Besides, predictors of training outcomes were indicated to be both individual characteristics, such as self-efficacy, goal orientation, and motivation to learn; and work environment properties, such as transfer of training climate [9, 10]. Organizational factor, learner characteristics, and training design and delivery factors exert negative influence on transfer of training [11]. Lack of reinforcement, equipment and supportive managerial culture, and transference from work environment were barriers to transfer of trainings [12, 13]. Other studies indicated that there were huge variations in design, delivery method and content of training, and in the knowledge, experience and skills of those developing and/or delivering the training sessions [14]. Study indicated that trainees' work load prior to training was found to be challenging to training sessions [15], and seasonality affects training effective [16]. Literatures affirm that training needs assessments play a strategic role in providing clear guidelines as to which professional skill deficiencies must be remedied and what the profile of future trainees should be to fill the differences between the employees' current performance and the performance that the organization expects of them [17].

Although newer approaches to training effectiveness evaluation have been proposed [18], Kirkpatrick's four-level model is the best method for evaluating the training effectiveness and widely accepted, and continues to be the most popular training evaluation model [19, 20]. The model uses participants' reactions, learning, behavior and result criteria [21,22]. Various studies on trainings effectiveness in organizations use Cohen's statistical power analysis for effect size which describes training effectiveness effect size 0.20, 0.50, and 0.80 as small, medium, and large respectively [23]. Similarly, according to Cohen [24] as cited by Lesinski et al. the effect size values of $0.00 \leq 0.49$ indicate small, of $0.50 \leq 0.79$ indicate medium, and of ≥ 0.80 indicate large effects [25].

Given the importance and substantial costs spent on trainings, it is not surprising that both organizations and researchers are interested in evaluating training effectiveness and its process management [9, 10]. In the study area, training program has been enmeshed with

obstacles that could erode its essence of effectiveness, yet insufficient researches have been conducted on this regard. This study aimed at assessing effectiveness and process management of trainings in public health institutions of Tigray region, Ethiopia conducted one year prior to the study.

1. Methods and Materials

1.1. Study design, setting and participants

Quantitative cross sectional study design was conducted in Tigray, northern Ethiopia region from March to May 2018. Health professionals who received short course training in the past one year prior to the study were study participants and excluded absentees, apprentice, and volunteers.

1.2. Sampling technique and procedure

357 health professionals in 40 health facilities (26 health centers & 14 hospitals) and 13 district health offices of 16 randomly selected districts in Tigray region, Ethiopia. Single population proportion and finite population proportion formula was used to include study participants using simple random sampling technique.

1.3. Data collection instrument and quality management

The study used pre-tested self-administered structured questionnaire. The data collectors were trained for one day and One-week prior to the actual data collection period. Close supervision and on spot check was done periodically to assure data quality.

1.4. Statistical analyses

Analysis was conducted using STATA V.14.1. Training effectiveness on this study was assessed with Kirkpatrick's method using participants' reaction (if participants are satisfied with the program then they will probably apply their new knowledge and skills in the workplace), learning (knowledge and skills gained), and behavior (transfer of new knowledge, skills, and attitudes to workplace to reflect positive changes in employee behavior and job performance) criteria. Descriptive statistics was used to display the data using frequency and percentages.

1.5. Ethical consideration

All procedures performed in this study were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethical clearance was obtained from Tigray health research institute institutional review board, and an official support letter was obtained from Tigray regional health bureau. Oral informed consent was obtained from each study participants, and confidentiality of data and scientific honesty was considered.

2. Results

2.1. General information of study participants

Of the 357 study participants, 171(48%) were from health centers, 124(35%) from hospitals, and 61(17%) from district health offices. One half 52.84% of the participants were first degree holders. The mean work experience of respondents in the health sector was 7 years (see Table 1).

2.2. Training effectiveness

On the basis of training methods used in the training sessions, 304(85.2%) were satisfied. More than three in four 279(78.2%) of the respondents expressed their satisfaction on the balance of theoretical and practical parts in the training sessions. The respondents perceived level of satisfaction on the trainings provided was 77.6%. Two in three 66.9% of the

respondents replied that training sessions used both practical & theoretical techniques. Moreover, 85.8% of the respondents reported to applied their knowledge and skill obtained from trainings on their jobs, and three in four 74.3% of the respondents believe that trainings had helped them to improve their performances (see Table 2).

To summarize trainings effectiveness based on the Kirkpatrick's model of evaluating training effectiveness; based on trainees' reactions, learning, and behavior, it was medium effect size with mean effect size of 0.79, 0.67, and 0.77, respectively. Hence, the overall training effectiveness of trainings that have been provided in the region in 2018 was on the medium range.

2.3. Training Process Management

The absence of institutional training policy, training committee, documented training needs, and annual plan consisting training plan was indicated by 54%, 64.1%, 47.8%, and 61% of the respondents, respectively. One in three 120(34.1%) of the respondents stated the overcrowding of training sessions (see Table 3).

2.4. Barriers to training knowledge and skill transfer

About 327(93.43%) of the respondents stated for transferred their knowledge and skills obtained from training sessions. About 302(86.04%) of training session participant have reportedly transferred their training knowledge and skill to the appropriate persons. The priority barriers for transferring training knowledge and skill to the work environment as stated by 203(57%) was related to their work environment, 81(23%) was related to the trainers and training methods used, and 55(15%) was reported to be related to the trainees. The rankings given by the respondents indicated that the priority management related barriers preventing transfer of training knowledge and skill in health institutions in orders were first lack of management support; second lack of communication and follow up; third lack of material and moral incentives; forth lack of organizational procedures, and fifth lack of accountability on trainees. Similarly, the rankings given by the respondents indicated that the priority trainee related factors preventing transfer of training knowledge to work environment in orders were: lack of absorptive and retentive capacity; lack of reliability of the source of training knowledge; work overload; and lack of motivation and confidence respectively.

3. Discussion

The overall training effectiveness using the Kirkpatrick's model, was medium effect size, other studies reported similar findings [26, 27].

As the findings of the study emphasize, there is a need for a comprehensive training need assessment to ensure trainings are demand driven. Literature also suggests that trainings should aim at addressing identified performance gaps to raise effectiveness and quality of service [4] and to set guidelines as to which professional skill deficiencies must be remedied [17]. The study point out that there are unqualified training experts, insufficient emphasis on practical skills, poor alignment with local priorities, neglecting local realities and focus on a small set of issues, inappropriate training materials, and congestion of training sessions. Similarly, studies in low-income countries suggesting that those are some of the obstacles that training programs face that reducing its effectiveness [6,7]. Studies in developing countries witnessed the presence of huge variations in the design, delivery method and content of training, and in the knowledge, experience and skills of those developing and delivering the training sessions [28, 29].

The study indicated that the priority barriers for training knowledge and skill transfer were lack of institutional management support and follow-up, limitations in training methods and trainers' competencies, trainees work overload and non-conducive work procedures. Literatures also show that work environment factor and individual characteristics are the main predictors of training effectiveness and knowledge transfer [8-10, 11, 13, 16,]. Transference from work institution, non-supportive organizational culture, employee's views, and lack of technology to support training were reported to be factors preventing training knowledge transfer [12].

The study didn't include the result criteria of the Kirkpatrick's model, and the smaller sample size, use of self-administered questionnaire, and cross sectional nature of the study were limitations of the study.

4. Conclusion

In conclusion, the level of effectiveness of trainings provided one year prior to the study was at medium effect size. The respondents' training reactions and level of satisfaction was good. However, trainees' knowledge and skills gained, behavior and on-the-job performance improved, and effect of their performance on the institutions' service delivery requires further consideration. Besides, conducting planned trainings, on-the-job mentorship and post-training monitoring are lacking. Implementing institutional training procedures, establishing training committees, documenting training profiles, conducting periodic training need assessments, coordinating training sessions, and carrying out post-training mentoring and evaluations are lacking. Work environment, trainers, and training methods used were the priority barriers for knowledge and skills transfer; and the management related barriers were lack of management support, incentives, follow-up, communication, and lack of organizational procedures. Similarly, the priority trainee related barriers were lack of trainees' absorptive capacity and work overload.

We recommend health bureau and its stakeholders to periodically evaluate and monitor training programs. Besides, we recommend implementation of training policy and institutional procedures, conduct training need assessments, proper management of training processes, and strengthen inclusiveness and scheduled trainings.

5. Declaration

5.1. Ethics approval and consent to participate

All procedures performed in this study were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethical clearance was obtained from Tigray health research institute institutional review board, and an official support letter was obtained from Tigray regional health bureau. Oral informed consent was obtained from each study participants, and confidentiality of data and scientific honesty was considered.

5.2. Consent for publication

The authors gave their consent for publication of this original research work.

5.3. Availability of data and material

The authors ensure the availability of data and material of this research work and are ready to provide when requested.

5.4. Competing interest

The authors declare no competing interest

5.5. Funding

This study was funded by Tigray Health Research Institute, Tigray, Ethiopia.

5.6. Author contributions

Kiros Demewez¹ conceived the study idea. Abera Berhe² designed and performed the analysis and the write up on methods, and designed first draft of the manuscript. All the authors participated in designing tools, data management, analysis and the write up, and agree to be accountable for all aspects of the work related to the accuracy or integrity of any part of the work. All authors have read and approved the manuscript.

6. Acknowledgement

The authors would acknowledge Tigray health research institute and Tigray regional health bureau, the district health office and institutions and study participants for their cooperation during the study time.

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Annexures: - Supporting Tables 1, 2 and 3 for supporting Information.

Tables

Table 1- General information of the respondents

Characteristics	N (%)
Respondents working health institution	
General hospital	90(25.3%)
Primary hospital	34(9.6%)
Health center	171(48%)
District health office	61(17.1%)
Age (in years)	
<30	157(44.0%)
30-45	113(31.7%)
>45	87(24.4%)
Sex:	
Male	178(50.3%)
Female	176(49.7%)
Highest education level:	
Diploma	186(52.8%)
Bachelor of Science/ Masters of Science	190(53.9%)
N: Number (frequency)	

Table 2- Training effectiveness in terms of participants' reaction, learning & behavior

Training effectiveness Criteria	Yes	No
Participant reactions	(Positive)	(Negative)
Relevance of trainings	321(90.0%)	36(10.0%)
Motivation to participate in training sessions	325(91.0%)	32(9.0%)
Trainers knowledge and skill on the trainings	316(88.5%)	41(11.5%)
Trainers preparation for the training topic	300(84.0%)	57(16.0%)
Training methods used in the training sessions	304(85.2%)	53(14.8%)
Content arrangement of the training with time	260(72.8%)	97(27.2%)
Training meets predetermined objectives	283(79.3%)	74(20.7%)
Encouragement to participate	302(84.6%)	55(15.4%)
Respondents perceived level of satisfaction on trainings	277(77.6%)	80(22.4%)
Participants' learning		
Enough number of trainings received	188(53.8%)	162(46.2%)
Trainings organized in right place based on the objective	274(78.1%)	77(21.9%)
Enough training aid/materials received in the training	270(77.1%)	80(22.9%)
Allocation of enough time to complete the training topic	207(58.8%)	145(41.2%)
Practical & theoretical training techniques used	234(66.9%)	116(33.1%)
Participants' behavior		
Assigning trainees after trainings in the right position	285(81.4%)	65(18.6%)
Conducted mentorship after training	178(50.28%)	176(49.7%)
Do trainings have positive impact on your performance	255(74.3%)	88(25.7%)
Applied the knowledge and skill obtained from trainings	290(85.8%)	48(14.2%)
Improve capacity achieves institutional objectives	212(59.7%)	143(40.3%)
knowledge and skill transferred to colleagues	302(86.0%)	49(14.0%)

To summarize trainings effectiveness based on the Kirkpatrick's model of evaluating training effectiveness; based on trainees' reactions, learning, and behavior, it was medium effect size

with mean effect size of 0.79, 0.67, and 0.77, respectively. Hence, the overall training effectiveness of trainings that have been provided in the region in 2018 was on the medium range.

Table 3-Training process management factors

Training process management factors	Yes	No
Training needs identified and documented	181(52.2%)	166(47.8%)
The institution has training policy	154(46%)	181(54%)
Training plan incorporated in institutional plan	134(38.9%)	210(61%)
The institution has training committee	125(35.9%)	223(64.1%)
Training participants selection done by committee	231(66.9%)	114(33%)
Right professionals are selected for trainings	284(80.7%)	68(19.3%)
Participation get official letter for trainings	324(91.3%)	31(8.7%)
Trainees' comments are incorporated	283(80.2%)	70(19.8%)
Institution has record of staff who took training of trainers	170(49%)	177(51%)
Training organizers used basic training aids	301(84.8%)	54(15.2%)
Official letter used to call participants to trainings	170(47.6%)	187(52.4%)
Trainees were informed in advance about training topic	264(78.1%)	74(21.9%)
Number of trainees in a session are excessively high	120(34.1%)	232(65.9%)
Pre and posttest during training sessions conducted	308(87.7%)	43(12.3%)
Pre and posttest adequate to assess knowledge & skill	299(89.8%)	34(10.2%)

Cite this article:

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“Training Effectiveness and Its Process Management in Public Health Institutions of Tigray Region, Northern Ethiopia”. Name of the Journal: International Journal of Academic Research in Business, Arts and Science, (IJARBAS.COM), P, 136-147. DOI: <http://doi.org/10.5281/zenodo.3817642> , Issue: 4, Vol.: 2, Article: 14, Month: April, Year: 2020. Retrieved from <https://www.ijarbas.com/all-issues/current-articles/>

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