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ASSESSING THE EFFECTS OF TRAINING ON KNOWLEDGE AND SKILLS OF HEALTH PERSONNEL: A CASE STUDY FROM THE FAMILY HEALTH PROJECT IN SINDH, PAKISTAN

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Background: The Family Health Project (FHP) was implemented in the province of Sindh during 1992-99 with the assistance of the World Bank. The project was designed to bring substantial changes in health care system for achieving improvement in the health status by strengthening the quality and integration of primary health care services. One of the major components of the project was to develop the institutional capacity of Ministry of Health in Sindh. This is a comparative analysis to assess the knowledge and skills of health care providers in Area Focus Approach (AFA) health facilities with the ones in non-AFA health care facilities. **Methods:** In order to obtain a representative sample, 8 districts were selected which included, Larkana, Khairpur, Nawabshah, Dadu, Tharparkar, Thatta, Karachi South, and Karachi West. A structured questionnaire was designed with various sections to assess the knowledge and skills of various cadres of health facility staff. **Results:** This comparative assessment has come up with some interesting results; there is a difference between the scores of knowledge and skills between AFA and non-AFA health care providers. This assessment identified some important methodological issues such as the use of base-line information for comparing the results and the selection of a comparable study population for controlling the confounding factors. **Conclusions:** These findings can be used as important lessons learned for producing better results of any post training assessment intervention.

KEY WORDS: Family Health Project, Training, Knowledge, Skills.

INTRODUCTION

Many countries, both developed and developing, are carrying out health sector reforms in varying degrees and forms. The goals of these reforms are: to enhance efficiency of the health care system, both technical and allocative; to improve the quality of services; and/or to generate new resources for the system.[1,2] Health sector reforms improve the aggregate health status of the population by including package of services, structure and organization of service delivery and the consumer-provider relationship.[3] Quality of care is related to vital issues of health care reforms and is linked to accessibility and the problems of ineffective and inappropriate care.[4] One of the important strategies to address these issues through health care reforms is the human resource development, of which, training is an important component.[5-,7] Training as a capacity building tool improves the knowledge and skills of health care providers.[8] In Pakistan, there have been several training programs implemented particularly during the last decade through various projects under the health systems reforms. Thousands of health personnel have been trained in different disciplines. The major concern for these training programs has been the impact of these training on the health of the population and the efficiency and effectiveness of the implemented interventions. The literature remains almost silent for depicting any example, not only in this part of the world but globally as well. This paper presents our experience for assessing the effect of training imparted to the health personnel in Sindh through the World Bank funded Family Health Project (FHP). In the absence of a controlled setting, it is difficult to assess the impact of a training [9], particularly the attribution of a training program to the health status of the population.[10-12] However, a change in the knowledge and skills can be assessed though the objectivity still remains an issue. The impact or effect assessment is a vital part of any training program which helps to identify the strengths and limitations of the training and guides for necessary modification of the curriculum and training approaches.[7,13,14] This assessment was indispensable as the health care system particularly in the public sector in Pakistan is beset with numerous problems; structural fragmentation, resource scarcity, inefficiency and lack of functional specificity and accessibility.[15] Family Health Project (FHP) was launched in all four provinces of Pakistan with the assistance of World Bank. The FHP in Sindh was implemented during 1992 to 1999. The Aga Khan University, a private medical university, provided technical assistance in its implementation. The project was designed to improve the health system in Sindh through systematic changes in the existing health system with the focus on developing institutional capacity.

Strategies of the project included training to health care providers, creating linkages with community health workers, increasing female paramedical staff, strengthening referral system, and enhancing the capacity to handle medical emergencies at the peripheral level. Quality issue was addressed through in-service training for the field staff, upgrading peripheral health facilities, improving drug supplies, strengthening diagnostic facilities, increasing availability of family planning services, integrating different services, and strengthening management and supervision. Utilization of health services was improved by encouraging community participation and health education.

In 1997, the project was restructured with the introduction of Area Focus Approach (AFA). The AFA concept was to develop models of integrated health services in each of the 21 districts. The model included one Rural Health Centre (RHC) with four or five surrounding Basic Health Units (BHUs) and Maternal Child Health (MCH) centers. These centers were to develop linkages with the Community for MCH and preventive services through community health workers, Lady Health Workers (LHWs), Traditional Birth Attendants (TBAs), and the staff of Malaria Control Program and Expended Program of Immunization (EPI) in order to develop a comprehensive Primary Health Care System. A need assessment of manpower, equipment, training and physical facilities was conducted and the project provided these facilities with the required inputs to implement the program.

On the completion of FHP, a small scaled post intervention survey was carried out in December 1999 to January 2000. The objective was to assess the knowledge and skills of health care providers in relation to various trainings imparted by FHP under AFA. This paper presents the findings of this survey and discuss the methodological issues in order to draw important lessons.

MATERIAL AND METHODS

This was a comparative analysis to assess the knowledge and skills of health care providers in Area Focus Approach (AFA) health facilities with the ones in non-AFA health care facilities.

In order to obtain a representative sample, 8 districts were selected which included, Larkana, Khairpur, Nawabshah, Dadu, Tharparkar, Thatta, Karachi South, and Karachi West. The selection of these districts took into account the differential socio-economic and geographical aspects. Out of 106 AFA health facilities in total, 31 AFA health facilities and 31 non-AFA health facilities were selected from these districts. Non-AFA health facilities were selected on the basis of availability of Prime Minister (PM) program for Lady Health Workers (LHWs) and the availability of medical officer incharge at the facility.

Knowledge and skills of health care providers were assessed in selected training areas as follows:

Training area	**Cadres of health care provider***
Management	Medical officer / Incharge
Laboratory Techniques	Male Health Technician (MHT)/Laboratory Tchnician
Family Planning	Lady Health Visitor (LHV) / Female Health Technician (FHT) / Nurse & Woman Medical Officer (WMO)
Health Education	HV/FHT/Nurse and WMO
Nutrition	HV/FHT/Nurse and WMO

** In case where more than one staff of the same cadre was available, one was identified randomly.*

A structured questionnaire was designed with various sections to assess the knowledge and skills of various cadres of health facility staff. For the assessment of knowledge in management, laboratory techniques, family planning, health education and nutrition, relevant questions were asked based on the training imparted. Regarding skill assessment in management a number of questions were put in such a way that each question had two parts. In part (a) medical officer incharge was asked about a particular skill/practice and in part (b) he was asked to provide documentary evidence to support a positive response. Skills for laboratory techniques were assessed by asking the Male health technician/Laboratory technicians to perform three laboratory tests that included Hemoglobin estimation, malarial parasite test (MP) and urine sugar estimation. They were assessed through direct observation and by verifying each step from the checklist. Skills related to family planning were assessed by asking the steps for Intra uterine contraceptive device (IUCD) insertion, verified by the checklist. For Health education, both listening as well as probing skills related to 'communication' were assessed by observing directly the provider-client interaction, using a checklist. Skills in nutrition were assessed by observing directly the growth monitoring of children with the help of a checklist.

The instrument was field tested in a pilot study in district Hyderabad. 10% of the sample both from AFA and non-AFA were assessed. The interviewers were trained according to the manual of instructions. Verbal consent was taken from the health personnel and they were briefed about the interview technique and the potential nature of the use of information collected.

The data was edited simultaneously during the field survey. Thorough scrutinies of all completed questionnaires were done at Aga Khan University. Data was finally edited by the principal investigator and co-investigator before entering into the computers. Data was double entered in Epi Info (6.04), then validated and corrected for any inconsistency. Finally 10% of the questionnaires were checked randomly to look for any error in data entry (<0.3%).

For the analysis purpose, scores for the knowledge and skills were developed separately which were based on correct responses within the questionnaire. Each question was assigned the score of '1' if it was correct, otherwise '0'. Mean scores for the knowledge and skills in each of the disciplines were compared among AFA and non-AFA health personnel, according to the training status, using ANOVA (Analysis of variance). To control for the confounding; only those trained by FHP were taken into analysis. Statistical software, SPSS (8.0) and Epi Info (6.04) were used for data analysis.

RESULTS

The knowledge and skills of health care providers were assessed both in AFA and non-AFA health facilities. As described earlier, health personnel were assessed in five areas, including management, laboratory techniques, family planning, health education & nutrition. It was found that the number of trained health personnel in AFA was much higher than in non-AFA. Few health personnel found in non-AFA health facilities had also received training from FHP prior to the implementation of AFA strategy when training were imparted province-wide. In AFA most of the health personnel were trained in laboratory techniques, while in non-AFA majority of the health personnel had their training in family planning. (Table 1)

In order to present the findings, mean scores for knowledge and skills were developed in each of the discipline both for AFA and non-AFA health facilities and also according to the training status.

For the management training, the mean scores of knowledge was higher among the trained health personnel in non-AFA than their counter parts in AFA, whereas mean scores for the untrained was slightly better in AFA. Knowledge in laboratory techniques stands out clearly among AFA health personnel, while knowledge in family planning was slightly better in AFA. Knowledge about health education and nutrition was better in non-AFA than AFA both among trained and untrained health personnel. (Table 2)

Skill assessment in all disciplines showed a different trend from that observed for the knowledge in respective areas. Skills in management, family planning and health education found out to be better among trained health personnel in AFA than those trained in non-AFA. Regarding the laboratory techniques, the skills were not assessed for non-AFA due to the non-availability of concerned health staff and/or laboratory test, although the mean scores were higher among trained AFA than untrained AFA except for MP test. Mean scores for skills in nutrition was highest among trained non-AFA health personnel than trained AFA, whereas untrained health care providers in AFA performed better than their counterparts in non-AFA. (Table3)

Table-1:Distribution of AFA and non-AFA health personnel according to the training status.

Training categories	Both		AFA		Non-AFA	
	Trained	Untrained	Trained	Untrained	Trained	Untrained
Management (n=50)	22 (44%)	28 (56%)	15 (62%)	09 (38%)	07 (27%)	19 (73%)
Laboratory Techniques (n=27)	16 (59%)	11 (41%)	16 (89%)	02 (11%)	00 (0%)	09 (100%)
Family Planning (n=27)	20 (74%)	07 (26%)	13 (77%)	04 (23%)	07 (70%)	03 (30%)
Health Education (n=31)	17 (55%)	14 (45%)	15 (79%)	04 (21%)	02 (17%)	10 (83%)
Nutrition (n=27)	13 (48%)	14 (52%)	11 (65%)	06 (35%)	02 (20%)	08 (80%)

Table-2:Distribution of mean scores for knowledge in various disciplines according to the training status in AFA and non-AFA health facilities.

Disciplines	AFA	Non-AFA	AFA	Non-AFA
	Trained Mean (SD)	Trained Mean (SD)	Untrained Mean (SD)	Untrained Mean (SD)
Management *	4.40 (1.92)	5.43 (1.40)	3.78 (1.09)	3.58 (1.80)
Lab. Technique **	12.75 (1.57)	N/A	5.50 (2.12)	1.78 (3.70)
Family Planning	10.38 (1.19)	10.29 (1.38)	10.25 (0.96)	10.00 (3.00)
Health Education*	4.40 (1.92)	5.00 (2.83)	2.00 (1.83)	3.90 (1.66)
Nutrition*	6.82 (0.98)	8.00 (1.41)	5.67 (1.75)	5.75 (1.67)

* Marginally significant ** Statistically significant N/A - no observation

Table 3: Distribution of mean scores for skills in various disciplines according to training status in AFA and non-AFA health facilities.

Disciplines	AFA Trained Mean (SD)	Non-AFA Trained Mean (SD)	AFA Untrained Mean (SD)	Non-AFA Untrained Mean (SD)
Management	2.40 (1.55)	1.00 (0.82)	1.88 (1.64)	1.95 (1.47)
Lab. Technique (Hb)	8.43 (1.74)	N/A	7.50 (2.12)	5.00 (0.00)
Lab. Technique (MP)	6.50 (0.73)	N/A	7.00 (0.00)	N/A
Lab. Technique (Urine sugar)	5.71 (0.47)	N/A	5.50 (0.71)	N/A
Family Planning (IUCD)	12.75 (4.37)	10.67 (3.98)	N/A	5.00 (7.07)
Health Education (Listing)	3.40 (1.35)	1.00 (1.41)	2.50 (1.29)	2.80 (1.75)
Health Education (Probing)	4.07 (0.96)	3.00 (1.41)	3.50 (0.58)	3.90 (1.52)
Nutrition (Growth monitoring)	5.27 (3.47)	8.50 (.71)	7.20 (2.49)	5.80 (3.19)

N/A - no observation

DISCUSSION

The main purpose of this paper is to highlight the methodological issues in assessing the effects of a training program. We used Family Health Project (FHP) in Sindh as a case study to discuss this very important component of human resource development. The FHP intended to improve the health status of population with special emphasis on increasing the availability and quality of maternal health services and human resource development.

This assessment was carried out to assess the level of knowledge and skills of health care providers among the project intervention area as compared to non intervention area after a comprehensive training program in the intervention area.

We identified several limitations and confounding factors which might have blurred the interpretations of results of this study. Among the confounding factors, contamination of information from AFA to non AFA and the effect of media and other intervention programs by NGOs etc. would be important. Similarly age and work experience might have confounded knowledge and skills assessment of the health care providers as well. An important limitation of the study was the lack of base-line information on the same parameters as this study used which might have portrayed a better picture of the effects of the training program by FHP.

This comparative assessment has come up with some interesting results; there is a difference between the scores of knowledge and skills between AFA and non-AFA health care providers. It was envisage that the training of the health care providers would improve their knowledge as well as skills, so that the patients could receive improved health care. [5- 7, 16]

This assessment has shown that in two of the areas that is laboratory techniques and family planning, the knowledge as well as the skills of the health care provider stands out clearly in the AFA. One of the reasons might be the provision of supplies and logistical support to carry out these activities in AFA which provided the opportunity to AFA personnel to keep abreast their knowledge and skills.[17, 18]

In non-AFA the knowledge of health care providers in the areas of management, health education and nutrition was higher than in AFA. Similarly they had better skills in nutrition. The possible explanation is that FHP had provided training to health care providers before the inception of AFA concept in the whole province.

The overall performance of health care provider in AFA was slightly better than that of non-AFA probably due to better supervision and the logistical support.

CONCLUSIONS AND RECOMMENDATIONS

The impact or effect assessment of a training program is very important not only for realizing its benefits but also to identify further training needs and see the worth of training efforts and utilization of resources. There are however, methodological issues which furnish this task bit difficult and subjective. The case study of FHP in Sindh provides us an opportunity to discuss these issues. The study identifies several important confounding factors and limitations which if carefully analyzed and understood, can help produce better results in similar approaches in the future. The issue of evaluation before and after the training using a base-line and post-intervention assessment has come out to be the most important finding.

Based on the findings of this study, we recommend that for assessing the impact or effect of any training program, it is necessary to include a base-line evaluation of the knowledge and skills of the potential trainees in the overall training package. Comparative analysis provides more objective assessment but requires more careful selection of the study population to lessen the effects of confounding factors such as previous exposure to similar training,

experience and age. Controlling these factors would require more time and efforts but help produce more valid and credible results.

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