

Effect of a Tailor-Made Continuous Medical Education Program for Primary Care Physicians on Self-Perception of Physicians' Roles and Quality of Care

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ABSTRACT: **Background:** A survey conducted among Israel Defense Force primary care physicians in 2001 revealed that they consider patients' needs more than they do organizational needs and that the education PCPs currently receive is inadequate. In 2003 the medical corps initiated a multi-format continuous medical education program aimed at improving skills in primary care medicine.

Objectives: To measure and analyze the effect of the tailor-made CME program on PCPs' self-perception 3 years after its implementation and correlate it to clinical performance.

Methods: In 2006 a questionnaire was delivered to a representative sample of PCPs in the IDF. The questionnaire included items on demographic and professional background, statements on self-perception issues, and ranking of roles. We compared the follow-up survey (2006) to the results of the original study (2001) and correlated the survey results with clinical performance as measured through objective indicators.

Results: In the 2006 follow-up survey PCPs scored higher on questions dealing with their perception of themselves as case managers (3.8 compared to 4.0 on the 2001 survey on a 5 point scale, $P = 0.046$), perceived quality of care and education (3.5 vs. 3.8, $P = 0.06$), and on questions dealing with organizational commitment (3.5 vs. 3.8, $P = 0.01$). PCPs received higher scores on clinical indicators in the later study (odds ratio 2.05, $P < 0.001$).

Conclusions: PCPs in the IDF perceived themselves more as case managers as compared to the 2001 survey. A tailor-made CME program may have contributed to the improvement in skills and quality of care.

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Health care systems around the world are challenged with the demand to provide high quality medicine, while at the same time constraining rising health care costs. The primary care physician has a central role in achieving these goals by coordinating all aspects of patient care while also managing medical costs [1].

The PCP's self-perception regarding this duality is considered a cornerstone of gatekeeping. Primary care gatekeeping is a measure adopted by health care organizations to control costs and improve the quality of treatment [1]. However, gatekeeping is not always well received, because patients as well as PCPs believe its purpose is solely to limit expenditures of medical treatment rather than maintaining or improving the quality of care [2]. The Medical Corps of the Israel Defense Forces is responsible for providing medical services to members of the IDF. Basically, it functions as a managed care system that relies heavily on primary care services. A survey conducted in the IDF in 2001 revealed that 98% of all PCPs view their role as case managers, but only 40% of them considered to the same extent the needs of the army, economic aspects, and their responsibility to the patient [3]. Importantly, the same survey indicated that only a minority of IDF PCPs felt that the education they received prior to taking on their primary care positions was adequate to provide high quality care. Taken together, these results indicated a weakness in both components of gatekeeping.

In response to the 2001 survey, the medical corps of the IDF initiated in 2003 a multi-format educational program for PCPs before and during their military service. Three years after the implementation of this program, the changes in PCPs' self-perception in terms of roles and perceived quality of care were assessed and compared to an objective assessment of clinical process measures.

SUBJECTS AND METHODS

DEFINITIONS

Most PCPs in the IDF are general practitioners who have not participated in a residency program; only a few are

PCP = primary care physician
CME = continuous medical education
IDF = Israel Defense Forces

specialized physicians and represent a variety of specializations. PCPs can serve as enlisted personnel, as career army personnel, or as civilians employed by the army. Most PCPs are young and have only a few years clinical experience, but a growing number are older and more experienced. The differences between these groups are fundamental with respect to knowledge, skills and motivation, as well as the sense of identification with the Medical Corps' aims.

PCPs can also be classified according to the location of their clinic. Thus, clinics are categorized as: a) active front units – the basic field clinics of the IDF, staffed usually by a single general practitioner; b) military training centers – mostly larger multi-physician medical clinics; and c) home front clinics – multi-physician medical clinics that employ between two and ten PCPs and are supported by medics and nurses. These differences between clinic types have been described elsewhere [4].

THE MEDICAL EDUCATION PROGRAM

In 2002 the medical corps initiated a multi-format continuous medical education program. This multiphase, multidisciplinary approach was aimed at improving skills in primary care medicine (mostly physical examination, clinical analysis, communication), emergency medicine, and basic public and administrative tools and skills in medical "client-oriented" services. This educational program was carried out using four platforms [Table 1]:

- A basic 3 month course before or shortly after the start of service, aimed at providing knowledge and skills necessary for serving as a military PCP. Physicians expected to serve in field positions underwent 1 month of primary care medicine training, while those expected to serve in home front clinics received 2 months of such training. The rest of the course was devoted to military operations medicine. This course was intended only for enlisted MDs and not for employed civilians. Towards the end of the course an OSCE (Objective Structured Clinical Examination) was conducted and participants had to achieve a passing score prior to service.
- A follow-up, 1 week, small group teaching course, aimed at improving clinical skills in primary care medicine and incorporating also economic and organizational issues

- A postgraduate medical education course at Tel Aviv University (18 five hour meetings), mainly aimed at improving clinical knowledge
- A Web-based distance learning course comprising 12 written lessons, each followed by a short quiz.

SURVEY

A survey was conducted using a non-anonymous questionnaire that was mailed or faxed to a representative sample of PCPs serving in the IDF. The questionnaire and the method of data collection were identical to that used in the 2001 survey [3] in order to allow comparison with minimal confounders. The physicians were asked to complete the form and return it by mail or fax. One month after the start of the survey a research assistant contacted non-complying physicians by telephone and reminded them to complete and return the forms. Non-anonymous questionnaires were used to allow for questionnaire tracking and identifying non-compliant physicians.

The questionnaire included: a) demographic background (age, gender, service, rank, and clinic type), b) professional background (place of medical education, medical specialization, and number of years experience as a PCP), and c) statements on self-perception issues and ranking of roles as a PCP in the IDF. The physicians were asked to rank how much they agreed with each statement using a Likert-type scale (1 = lowest to 5 = highest). Statements were grouped together in one of three categories: PCP roles, self-perception, and identification with the Medical Corps.

QUALITY INDICATORS

Since 2000 the IDF Medical Corps has been operating a comprehensive quality measurement system in primary care clinics. This system collects both administrative explicit data in the form of predetermined indicators for common primary care conditions and implicit data in the form of a structured observation by senior physicians on evaluated PCPs. For our current study, these data enabled an objective assessment of changes in quality of clinical practice for the 5 year study period (2001–2006).

The following common primary care conditions were included in our analysis: acute gastroenteritis, asthma, upper respiratory infections, urinary tract infections, low back pain, mental disorders, headaches, and hypertension. The indicators were drawn from patients' records by experienced physicians. For each condition three indicators were measured, so the maximum score for every index disease was 3 (calculated out of an average of at least three patients' charts). This system is described in detail elsewhere and includes a full list of indicators [5].

STATISTICAL ANALYSIS

Statistical analysis was conducted using the SPSS for Windows 12.0. For univariate analysis comparing the change in time we used the chi-square test and for continuous variables the

Table 1. The CME program implemented in 2002 for PCPs in the IDF

| Intervention | Time frame | Type of education |
|------------------------------|-------------------------------|-----------------------------|
| Basic medical officer course | 3 months (daily) | Active and passive learning |
| Small group workshop | 1 week (daily) | Active small group teaching |
| Postgraduate course | 1 year (5 hours each 2 weeks) | Passive learning |
| Web-based distance learning | 6 months (12 lessons) | Active personal learning |

Student *t*-test. A *P* value < 0.05 was considered significant. All tests were two-tailed.

To control for the differences in physician characteristics in the two time frames we used logistic regression. The answers to the questionnaire were dichotomized to high and low near the median. Using logistic regression each question served as the outcome and the physicians' characteristics as a co-variant. In comparing the 2001 and 2006 indicator data, logistic regression was also used to control for clinic type and type of PCP service (enlisted vs. career vs. civilians). Indicator scores were dichotomized to "high" (> 2 out of 3) and "low" (≤ 2 out of 3).

RESULTS

Of 172 questionnaires delivered 120 were returned for analysis (70% compliance). The demographic data of the participants in the study are presented in Table 2 and are compared with the population study of 2001. The participants in the current study were significantly older on average and a significantly higher fraction of them had received their medical education outside of Israel, compared with the population in the 2001 survey. Other PCP characteristics such as gender, service, clinic types, percentage of PCPs who are specialists, and years of experience as a PCP were similar between the two surveys.

Table 2. Demographic and professional background data of study physicians

| Characteristic | 2001 | 2006 | <i>P</i> |
|-------------------------------------|-------------|------------|----------|
| Overall number of PCPs | 137 | 120 | |
| Age (mean ± SD) | 32.2 ± 8.2 | 34.9 ± 9.4 | 0.02 |
| Gender | | | NS |
| Male | 110 (80.3%) | 94 (78.3%) | |
| Female | 27 (19.7%) | 26 (21.7%) | |
| Service | | | NS |
| Enlisted | 60 (43.7%) | 45 (37.5%) | |
| Career army personnel | 40 (29.1%) | 46 (38.3%) | |
| Employed civilians | 32 (23.3%) | 29 (24.2%) | |
| Clinic | | | NS |
| Active front | 49 (36.6%) | 33 (28.2%) | |
| Military training center | 34 (25.4%) | 28 (23.9%) | |
| Home front | 51 (38.0%) | 56 (47.9%) | |
| Unreported | 3 | 3 | |
| Country of medical education | | | 0.015 |
| Israel | 82 (63.6%) | 60 (50.0%) | |
| Eastern Europe & Asia | 36 (27.9%) | 34 (28.3%) | |
| Western Europe & North America | 9 (7.0%) | 16 (13.3%) | |
| South America | 2 (1.6%) | 10 (8.3%) | |
| Specialized PCPs | 15 (11.5%) | 18 (15.5%) | NS |
| Years working as PCPs (± SD) | 3.7 ± 5.3 | 4.3 ± 5.4 | NS |

Table 3 summarizes the average score (on a 1–5 scale) for all the statements as ranked in both surveys. In ranking the PCP's roles, significant differences were found in weighing economic considerations and in considering army needs in patient management as both were ranked higher by PCPs in the recent survey. For questions on PCPs' self-perception of quality of care issues, PCPs in the recent survey gave a higher ranking to their former medical education as compared to education received during their service in the Medical Corps.

We also tested for differences when grouping together the questions relating to the PCP's roles (questions 1–9), self-assessment (questions 10–14) and degree of identification

Table 3. Ranking of primary care physician roles in the two surveys

| | 2001 | 2006 | <i>P</i> |
|---|-----------|-----------|----------|
| Ranking PCP roles | | | |
| 1 To coordinate all patient care | 4.7 ± 0.5 | 4.7 ± 0.7 | NS |
| 2 To identify and follow chronic and complex patients | 4.6 ± 0.7 | 4.7 ± 0.6 | NS |
| 3 To promote health issues and preventive medicine | 4.3 ± 0.9 | 4.4 ± 0.9 | NS |
| 4 To counsel patients on health issues | 4.3±0.8 | 4.2±0.9 | NS |
| 5 To have exclusive referral rights to specialist clinic | 2.3±1.1 | 2.3±1.2 | NS |
| 6 To have exclusive referral rights for tests and imaging | 3.7 ± 1.1 | 3.9 ± 1.1 | 0.06 |
| 7 To represent the patient's health status vis-à-vis his commander | 4.3±1.0 | 4.2±1.0 | NS |
| 8 To weigh economic considerations in patient management | 3.2±1.2 | 3.7±0.9 | 0.0004 |
| 9 To consider army needs in patient management | 3.7 ± 0.9 | 4.0 ± 0.8 | 0.02 |
| Self-assessment | | | |
| 10 I am satisfied with my work as a PCP | 3.9 ± 1.0 | 4.0 ± 1.0 | NS |
| 11 I provide high quality medical care | 4.0 ± 0.9 | 4.0 ± 0.9 | NS |
| 12 My former medical education allows me to provide high quality medical care | 3.5 ± 1.1 | 4.0 ± 1.0 | 0.001 |
| 13 During my service I receive adequate education | 2.9 ± 1.3 | 3.4 ± 1.2 | 0.004 |
| 14 The treatment policy of the medical corps is clear to me | 3.5 ± 1.1 | 3.7 ± 1.0 | NS |
| 15 I feel a sense of identification with the medical corps | 3.5 ± 0.7 | 3.8 ± 0.7 | 0.025 |
| Average scores | | | |
| Ranking PCP roles* | 3.8 ± 0.9 | 4.0 ± 0.9 | 0.046 |
| Self-assessment** | 3.5 ± 1.0 | 3.8 ± 1.0 | 0.06 |
| Identification with the IDF*** | 3.5 ± 0.9 | 3.8 ± 1.0 | 0.01 |

Numbers represent mean and standard deviation on a 1–5 scale.

* Questions 1–9.

** Questions 10–14.

*** Questions 8, 9, 14, 15.

Table 4. Quality indicators average scores in 2001 and 2006

| Indicator | 2001 | 2006 | Odds ratio | 95% confidence interval | P |
|-----------------------------|------|------|------------|-------------------------|---------|
| Acute gastroenteritis | 2.63 | 2.43 | 1.26 | 0.94–1.67 | NS |
| Asthma | 1.54 | 1.86 | 2.16 | 1.29–3.63 | 0.004 |
| Headache | 2.25 | 1.98 | 1.18 | 0.88–1.62 | NS |
| Hypertension | 1.96 | 2.25 | 1.72 | 0.46–6.47 | NS |
| Low back pain | 1.95 | 2.42 | 7.45 | 5.60–9.91 | < 0.001 |
| Mental disorder | 1.64 | 1.92 | 3.45 | 1.93–6.14 | < 0.001 |
| Upper respiratory infection | 2.61 | 2.75 | 4.55 | 3.30–6.28 | < 0.001 |
| Urinary tract infection | 2.29 | 2.37 | 2.24 | 1.62–3.08 | < 0.001 |
| All | 2.29 | 2.34 | 2.05 | 1.83–2.29 | < 0.001 |

Odds ratio are for a higher score in 2006 compared to 2001. OR is controlled for clinic and service type of PCP.

with the Medical Corps (questions 8, 9, 14 and 15) and compared the 2001 versus the 2006 data (giving equal weight to each question within the group). All three issues were ranked higher in the 2006 survey with statistically significant differences found for questions relating to PCP roles ($P = 0.046$) and identification with the IDF ($P = 0.01$), and borderline significance for questions relating to self-assessment of quality of care ($P = 0.06$).

In the 2006 survey the ranking of PCPs' roles, self-assessment and identification with the IDF did not change after controlling for gender, age, country of education, service type, seniority and being a specialist using the logistic regression method. This was also true for the 2001 survey data, as described previously.

Analysis of the quality indicator data showed higher scores in 2006 compared to 2001 for an average of all the indicators (2.34 vs. 2.29 respectively, $P < 0.001$) and for most individual indicators, as summarized in Table 4. This was also true after controlling for clinic type and PCP service type (odds ratio 2.05, confidence interval 95% 1.83–2.29). Non-significant changes were found in indicators measuring process of care for acute gastroenteritis, headache and hypertension.

DISCUSSION

The 2001 survey indicated that IDF PCPs did not take on their full role as gatekeepers in the medical care system and thought that their training did not fully prepare them for their roles. With that in mind, and the physicians' demand for more basic and continuous medical education, the IDF Medical Corps developed the CME program described earlier in this article. The follow-up 2006 survey demonstrated that PCPs still view their primary role as coordinating their patients' care and promotion of their patients' health issues, while perceiving the quality of health care that they provide

as high. However, fundamental differences were noted in PCPs' perspectives between the two surveys: namely, a) they weighed economic aspects and the army's needs to a greater extent, b) they believed that the medical education they receive is relevant to their roles, and c) they felt a stronger sense of identification with the medical corps. Also, on objective quality assessment using specific indicators, an overall improvement was registered when comparing the 2001 and 2006 results.

CME programs vary widely by type of intervention and range of measured outcomes. The most significant effects were found with multifaceted educational programs [6,7] and to a lesser extent with conferences and lectures [6,8,9], mail-out strategies, and videotapes [10]. It was reported that para-educational factors such as program duration and number of sessions directly correlate with CME usefulness [11]. In that respect, the multifaceted design of the CME program described here, the continuous nature of the program components (multisession format for a minimal total period of 40 hours), and the combination of active and passive interventions and small group teaching methodology support its contribution to the positive change measured in both PCPs' self-perception (questions 12 and 13 in Table 3) and actual clinical performance.

Interestingly, the reported increase in satisfaction with the educational topics was not associated with an increase in the perception of quality of care given by the physicians (question 11). Meta-analysis data comparing physicians' self-rated assessments with clinical performance found that the PCPs have a limited ability to accurately self-assess the quality of care rendered by them [11]. Taking into account the observed improvement in clinical performance, we support the latter conclusion and suggest that self-perception data on quality of care should be interpreted cautiously in conjunction with objective data. Importantly, this view does not underestimate the importance of PCP self-assessment for identifying items for educational intervention.

An alternative explanation is that the apparent shift of the PCPs' roles to take on a more "economical" and institutional approach might influence physicians' perception into believing this compromises quality of care. Other processes not described here might also act and influence the perception of quality such as work load, changes in medical services, and implementation of the electronic medical record.

The dual commitments of army physicians as primary care providers and as officers in a military organization put them constantly in situations of daily conflict and make the transition of PCPs to case managers and health services gatekeepers more difficult. From our experience, this duality, although not restricted to the military setup, is probably more pronounced in this setting than in civilian medical systems. Analysis of the 2001 survey showed that PCPs perceive their primary

obligation to the patient and their military duty only secondary. Interestingly, this was similar to reports from civilian systems [12]. The increased identification with the Medical Corps, as expressed by this survey, is an important factor that has implications beyond the gatekeeping roles of the PCPs and can also influence the retention of physicians within the IDF medical system. We believe the described CME program contributed directly through some of the educational topics and/or through PCPs' increased satisfaction with the overall education they received.

Our study has several limitations. Firstly, the survey was non-anonymous to allow for easier tracking and higher compliance rates in a complex primary health care system where PCPs are stationed throughout the country and in conflict regions. When constructing the current survey we had to use the exact same methodology used in the previous survey in order to accurately compare the two. Thus, from a comparative point of view we believe that the results and conclusions presented here are valid. Another potential limitation is in our attempt to attribute the changes in physicians' perceptions and quality of care to the described CME program when in fact other changes in the IDF health care system obviously occurred within the relevant time frame. However, based on the extensiveness of this CME program in terms of its professional effect on each PCP in the system, we believe that many of the conclusions we reached could indeed be attributable to this program.

In summary, this study provides insight into the self-perception of PCPs in the IDF health care system and suggests that CME might play an important role in promoting health care quality. This experience can contribute to the development and implementation of wide-reaching CME programs in other health organizations as well as for using self-perception surveys as a tool to measure and assess staff's needs, views and satisfaction.

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