Commentaries

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Total quality strategy in the formative process of the occupational physician

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Interest in applying the concepts of total quality management to the fields of health care and medical education is growing. This paper analyzes the field of education in occupational medicine to explore the relationships between teaching and the deliverance of a product or a service. Issues such as defining teaching customers, addressing customer needs, teaching processes, and assessing and improving quality teaching are described. The occupational physician is requested to act according to particular competencies. This demand implies the need to meet specific requirements. To assure the achievement of these goals, the implementation of a teaching process must include (i) targeting the learning objectives (the knowledge, skills, and attitudes the specialist should have), (ii) planning the evaluation system (ability of the course to assure the achievement of the objective), (iii) evaluating the curriculum (compliance of the acquired competencies to the needs).

Key terms competencies of the occupational health physician, continuous improvement, process management, quality assurance, system control, training objectives, training system.

Introduction

Need for quality in occupational health care training. At present there is growing interest in the quality of occupational health and safety. In some countries this interest is due to the application of legislation, whereas in others it has been raised by market-driven forces (1).

The quality approach in health care has 2 important aspects, technical quality and the quality of service. First, there is a growing need to assure good occupational health care. This is a very wide concept involving health, social, and behavioral concerns and also professional skills. In the near future there will be significant development in the approaches, methods, and techniques for establishing quality systems and quality assurance criteria for occupational health and safety structures and procedures (1). The new trend in planning services, also for occupational health services, is customer-oriented, and it can be viewed as a harmonized synthesis of the client's expressed needs and the demands of legislation and regulations. Occupational health services are to be provided by health care professionals, namely, physicians, nurses, and other professionals who have adequate complementary training in occupational health care. The occupational health physician is requested to act according to particular competencies. This demand implies the need to meet specific requirements, which are the main objectives of the formative process.

Quality of the formative process. Vocational training is rapidly changing to satisfy new economic and social demands. Training systems need to be flexible in order to deliver effective services that meet the new demands successfully. Therefore the culture of quality and the need for continuous improvement are spreading. Quality is conceived as a set of characteristics a service should have to satisfy customers' needs. It concerns the whole organizational process and its members and not just the final product of the process (total quality approach) (2).

The total quality approach, which focuses control on the whole system, has enabled the spread of quality, from the restricted manufacturing field to any other organization (eg, factory, bank, hospital, school). This is particularly true for the university, where the application of the principles of total quality in the formative process of the physician is a need rather than an option (3—5). The reasons for choosing the quality approach in the formative process include the need to (i) satisfy the new demands by exploiting the available resources (creativity, information, knowledge, communication skills, and problem-solving ability) to the utmost, (ii) improve the productivity of the system (eliminating the costs which arise

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whenever the activities are not properly carried out in the first place), (iii) make the staff assume responsibility to make the most of the field, (iv) improve the quality of life by focusing on continuous improvement, communication skills, and team work. In order to satisfy these requirements, the total quality approach targets the satisfaction of the customer by satisfying the needs of doers at different levels first. This action enables the different operators to place their best abilities at the school's disposal.

The formative process as the process of delivering a service

The application of the total quality approach to education must take into account the peculiarity of this sector. Before the concepts of quality assurance, process management, and continuous improvement can be transferred from manufacturing to services, specific knowledge of the type of organization is needed to adapt general concepts to the specific case. The educational field represents a service. The service is defined as a tool of satisfaction of the customer's needs and wishes (6). It is a set of activities that arises to meet the customer's need. Knowing the customer is essential to the deliverance of an effective service. Another important aspect is represented by the fact that the customer always entrusts something personal in order to have it improved (a personal property for fixing, personal data for legal advice, the body for health care). The distinctive elements of the service are (i) the customer, who interacts with the process and is considered either as the individual or as the community, (ii) the service that, for some aspects, is a process that can be measured and standardized, and (iii) the supplier, who delivers the service.

User or customer of the formative process of the occupational health specialist

The formative process of the occupational health physician has been affected by the total quality approach. This is mostly the consequence of the need to assure proper training for occupational health physicians, who are requested to act according to specific competencies. Although the customer of the formative process of the occupational health specialist may seem obvious, there is an unsolved debate on whether the student specializing in occupational medicine is to be considered a customer of the service or not (4). A customer, in fact, is defined as a subject who either makes use of services provided by professionals or buys products or services to satisfy one's needs (3). In education, on the other hand, a customer is not seen in commercial terms, but rather as someone expressing needs and expectations to be met. However, the student does not have deep knowledge about learning needs and therefore can be seen as the product of the service rather than as its customer. The student enters the process of enrichment and transformation and comes out with the needed competencies, ready to satisfy the work community's needs (7). This approach considers society as a whole as the customer of the formative process of the occupational health physician because society benefits from the abilities (know how to do), knowledge (know), and behavior (know how to be) developed by the occupational health physician during the formative process.

The identification of the customer is not difficult if the formative process is identified with the delivery of a service. In fact, a service has the following 3 main characteristics: (i) the customer is defined as co-actor of the service, (ii) the delivered service lacks proper standardization, and (iii) there can be more than one customer. A service is the activity of the customer's problem solving; therefore it develops from a strong interaction between the customer and the supplier. Hence both the customer and the supplier are protagonists of the service as co-actor and co-producer, respectively. Vocational training is a good example of the importance of co-operation and interaction. The student specializing in occupational medicine is therefore better seen as a customer actively interacting in the delivery of the service (and being a contributing factor to the final result of the process) rather than as the final product of the process. Thus it is necessary to standardize the formative process so that standard responses can be obtained from standardized formative stimuli. The term "formative stimuli" includes all the learning methods that can be used in the formative process. The definition of this learning method allows us to manage all the external factors to be managed which interact with the learning process so that the behavior of teachers and the competencies of students can be standardized. This approach assures control over the variability in the results that arises from the uniqueness of the individual (teacher and student) (7).

In order to have a homogeneous basis on which to act, the service requirements for teachers and the requisition for admission to the specialization school must be defined. Furthermore, it is important to define (i) the indicators, (ii) the evaluation system (to verify the compliance of the delivered service, ie, formation of the specialist according to well-defined standards), and (iii) the phase of the process in which the audit has to be carried out.

The formative process of the specialist in occupational medicine is a service with more than one customer. In fact the student is the customer, but so is the work community (employer and employees) where the specialist in occupational medicine operates once he or she has completed the formative process.

The health of the workers' community was the main strength of an enterprise we took into account when planning a "quality training program" to fulfill all the needs

and expectations of stakeholders. As a consequence, the stakeholders in the formative process of the occupational health physician are (i) the student who has learning objectives that will allow him to act according to well-defined competencies, (ii) the worker whose health is a constitutional right, (iii) the employer, who has the normative duty to care for his own health and the health of his employees (workers' health represents a peculiarity of the "human resource" which, in the modern concept of enterprise, is both a strength for any organization and a fundamental factor for the health of enterprises), and (iv) the state (government, ministry of health, national health service) because it founds the formative process for occupational health physicians and because it clearly states by law the needed competencies of the occupational health physician. The state defines both the competencies an occupational health physician should have and the peculiarity of the management system of the workers' safety and health. It also univocally defines the responsibilities, rules, procedures, and safety policy (with regard to the requirements of the workplace, risk management, and workers' health surveillance).

Formative process of the specialist in occupational medicine

Training a professional means delivering a service. The process includes planning, deployment, and assessment phases. As in any other process of delivering a service or a product, it is necessary to introduce the following concepts: quality of the training program, quality control of the formative process, quality of the educational supports, quality assurance, quality management, and continuous improvement. After the identification of the customers, the process of delivering the service must be analyzed so that the production process (teaching, educational supports, management, learning) and the production factors (teaching staff, educational structures and supports, syllabus) can be defined.

Definition of the training program. The set of characteristics of an entity (activity, process, organization, system, person, or their combination) determining its ability to satisfy customer needs is defined as quality (8). Customer needs are thus to be found in the characteristics of the delivered service or product. Therefore, the quality of a training program is its capacity to satisfy specific training needs by promoting the acquisition of specific competencies (9). As specified by the concept of "quality spiral", the definition of the customer's needs and, therefore, of the customer's expectations, is one of the phases of a service-delivering process. The "quality spiral", is a model to indicate different interacting activities that influence quality at different stages (from the identification of the needs to satisfy to the assessment of their fulfillment). In the educational field these different activities first lead to the definition of the particular competencies the professional should have once he or she has undergone the formative process and then lead to a definition of the training objectives and to the planning of the training program (10).

In the formative process of a health professional, the definition of the training objectives starts from the analysis of the health problem and therefore from the definition of the role of the professional. In the particular case of the formative process of the specialist in occupational medicine, it is the current legislation regarding the health and safety of workers that prescribes the requirements (10). Whereas European directive 391/89 (11) on the improvement of workers' health and safety does not provide any guidance about this point, the Italian implementation of this directive into national legislation clearly states the competencies needed by the occupational health physician and the needs of the customers (work community). This legislation establishes that, in order to practice medicine as an occupational health physician, a postgraduate diploma of specialization in occupational medicine is needed. The diploma should state the possession of specific competencies. A training curriculum has been defined by translating the customer needs into training objectives. Leading to the acquisition of specific competencies, this curriculum has been adopted by all Italian schools of occupational medicine. The definition of this new curriculum represents an approach to objective-based learning, as required by the total quality approach, and it has meant the overcoming of the traditional disciplinary approach of the 1970s curricula (12).

Planning of the evaluation system. After the objectives have been defined, it is necessary to plan the evaluation system. This system should (i) allow an unbiased measurement of the quality of the results (ie, of the product), (ii) allow control of the compliance of the learning objectives to the customers' needs, and (iii) allow the evaluation of the adequacy of the employed resources to assure the achievement of the objectives. In quality terms, in this phase, all the quantitative and qualitative elements that can monitor the course of the process are identified (indicators of process, structure, outcome, customer's satisfaction, costs). These indicators allow control of the product and of the process to assess whether the arranged procedures and action plans are effectively put into effect or not and whether they are fit for the intended purpose.

Assessment of the training programs. An assessment phase to measure whether the goals have been achieved or not is important. The assessment process measures the final competencies of the student and at the same time the effectiveness of (i) the training program, (ii) the teachers, and (iii) the teaching equipment. In terms of

quality this phase is involved in the quality control process (9). Its aim is to control the process and, if necessary, eliminate the causes of unsatisfactory performance which might have occurred at any stage of the "quality process". This phase is moreover crucial for assuring the quality of the product or service because it allows the evaluation of the compliance of the formative program contents to the real needs, the student expectations, the health problem, the health system, and all the institutions concerned. Thus, even if the contents (or the goals) of the formative program of the specialist in occupational medicine are clearly defined, the assessment phase is the most critical of the entire formative process.

Teaching programs should be evaluated for external reasons (such as the formative needs as expressed by legislation, the demand of the institutions financing the formative program, the need of the institutions employing the specialist or conformity assessment) or internal reasons (such as improvement of the quality of the program, improvement of the efficiency, student's requests, improvement of the competitiveness between schools).

The assessment of teaching programs sharing identical learning objectives should include (i) assessment of the teaching process, (ii) assessment of the learning process, and (iii) assessment of the product (ie, the acquired competencies). In order to achieve the purpose, it is necessary to identify the assessment methods by defining (i) appropriate assessment tools, (ii) the needed characteristics of the auditors, (iii) the extent of the assessment, and (iv) the element to be assessed (eg, knowledge, experience, competence).

In order to reach a satisfactory standard of product (ie, the formation of a professional able to work in a national and European environment), a single assessment procedure should be created that would allow uniformity in the auditors' behavior and in the standard of quality of the formative programs proposed by the different schools. This uniformity can be achieved if all the mentioned elements are defined properly.

Concluding remarks

It is only in the last few years that new research has begun to develop techniques and specific methodologies for quality assurance in services.

In the formative field the quality control theme has appeared more at a theoretical level than at a practical one, primarily because of the complexity of the problem, the need for a multidisciplinary approach, the lack of stimuli, and the existence of mistaken convictions. The following statements represent the most significant mistaken convictions (from the literature): (i) the quality of the educational service is not measurable, (ii) the suppliers (teachers) have a better opinion of the service delivered than the customers (the students), (iii) quality control is restricted to the front-line personnel, (iv) the approach to quality in education is the same as the one adopted in the productive system. It is necessary to overcome this narrow view of the possibilities before formative services can be delivered according to the new educational models based on the definition of competencies and on the motivation to learn. Furthermore, there is a growing need to assure the quality of the trained specialist, especially for the conspicuous use of resources in the implementation of quality systems and of total quality concepts in the occupational health service of the last generation.

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