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Use of quality circles among first year medical students and impact on student satisfaction

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Summary

Quality circles in the classroom setting are composed of students who meet regularly to identify, analyse and solve problems related to a course, and implement solutions. We recently instituted quality circles (QCs) among preclinical medical students and evaluated their impact on quality of learning and student satisfaction.

Included in the study were all 135 first-year medical students of Trakya University School of Medicine in the 2000–2001 academic year. Six students were selected randomly out of 26 volunteers as circle members. Circle participants met once a week for 14 45-minute sessions to discuss educational issues, propose solutions and prepare a report for submission to the dean.

A questionnaire was administered to all first-year students and the replies provided the problem pool from which the QC chose the problem to be addressed. A total of 22 problems concerned education and 28 were identified in the fields of accommodation, social activities and other issues.

To evaluate the change in the perceived quality of learning, circle members prepared a questionnaire designed to compare satisfaction at the beginning and end of the study period. This questionnaire was composed of 26 items and evaluated various aspects of education. There was a significant increase in student satisfaction after the one-year study period ($p = 0.001$).

In addition to enhancing quality of learning, quality circles improved student satisfaction as well. More studies should be conducted to test the impact of QCs on education in different settings and different classes. Our results show that the use of quality circles in first-year medical students improves quality of learning and student satisfaction.

Key words: medical education; quality circles; student satisfaction

Introduction and aim

Quality issues in professional education have attracted the attention of teachers, managers, politicians and the business community [1].

As technological developments eliminate the borders between nations, they also establish a competency milieu among nations, corporations and people. The concern for quality that has emerged from this competition is not limited to the production of goods. Competition is important in all areas of life, including services, manufacturing and education, and its effect is to improve quality and create value.

A quality circle (QC) is a small group set up to perform voluntary quality control activities. It is a mechanism which combines the best ideas of managers and workers in achieving the best possible outcome [2]. The philosophy of QCs originates from the assumption that those who are involved in work are best qualified to identify defects and suggest improvements [3]. Hence it is those who actually do the job who should be asked what quality improvements are needed. Although QCs first emerged as a means of ensuring and improving quality in the industrial environment, some investigators have attempted to adapt the system to education [4–6]. A QC is composed of a top-level manager, a facilitator whose task is to facilitate and stimulate the other members, a group leader and circle members. One group may have 3–15 members; the ideal membership is six [7]. QC members are trained in specific problem-solving techniques [4, 8]. They meet for a period of two to four weeks to discuss job-related problems. QCs in the classroom setting are composed of students who meet regularly to identify and analyse course-related problems, find solutions and implement them [5].

In studying the problem of education quality in American colleges and universities, the American National Institute of Education found that student involvement was the most important condition for the promotion of excellence in education [9]. The more students are involved in education, the more intensely they engage in their education to make learning happen. The use of QCs in the

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classroom is one way of increasing student involvement. On the other hand, QCs make students and teachers share responsibility for improving the quality of education and student life [6].

It is the policy of Trakya University to involve students in the the business of management and decision-making. Student representatives participate in faculty committee meetings, though without the right to vote. We felt this approach at managerial level would make it simpler to implement quality circles among students. The undergraduate medical programme at Trakya University School of Medicine consists of three preclinical and three clinical years. We have started the project in freshman year and plan to extend it to subsequent years.

We assumed that since QCs are intended to solve problems of the educational environment and increase student involvement in management, they should also improve student satisfaction. The aim of this study was to initiate quality circles among first year medical students and evaluate the impact of QCs on quality of learning and student satisfaction.

Methods

Included in the study were all 135 first-year medical students of Trakya University School of Medicine in the 2000–2001 academic year. After a talk describing quality circles and outlining the study, the students were asked for voluntary participation. Six students were selected randomly as circle members out of 26 volunteers. One of the circle members was elected as group leader. A teacher from the Department of Family Medicine provided facilitation. The facilitator trained the group leader and circle members in problem-solving and research methods.

The circle members met once a week for 45 minutes (figure 1). They discussed education-related problems and proposed solutions. At the end of each meeting a report was prepared by the group leader. The reports were submitted to the dean within 1–3 weeks, depending on the availability of appointments. At subsequent meetings the circle also considered how many circle proposals had been implemented, and to what extent.

Figure 1

Quality circle members during a meeting.

To maintain motivation and give the other volunteer students a chance to enter the circle, circle members were changed every three weeks. Circle leaders were changed at each meeting, to give other members the opportunity to lead a meeting.

A problem pool was created on the basis of a questionnaire self-administered to all first year medical students with the question "What problems are you facing with regard to your medical education?". As a next step a five-point Likert scale (0 = not important; 4 = very important) containing the 50 questions was developed to grade each problem in order of perceived importance and applied to all first-year students (table 1).

To evaluate the change in students' perceptions regarding education, circle members prepared another questionnaire using a five-point Likert scale (1 = poor, 5 = excellent) to measure current student satisfaction. Composed of 26 items, this questionnaire evaluated various aspects of education (table 2; figure 2).

The following five items were removed from this questionnaire at the dean's request:

1. Competence of teaching staff;
2. Faculty's general manner of dealing with students;
3. Availability/accessibility of the teaching staff;
4. Availability/accessibility of management;
5. Quality of counseling services for students.

To enhance unbiased reporting and participation, no names or other information that could identify students were recorded.

Table 1

The ten most important problems of the problem pool and their mean scores.

Problem	mean ± SD
Health services should be free for all students	3.81 ± 0.60
Movies should be played every week at the campus cinema	3.74 ± 0.76
Lecture materials (handouts, reading material, resources) should be provided for each lecture	3.61 ± 0.96
The computer laboratory should be open round the clock for internet access	3.59 ± 1.00
Problems with food quality in dining hall	3.45 ± 1.07
Lecture materials should be available prior to lectures	3.44 ± 1.15
Conferences should not be held during lunchtime	3.36 ± 1.16
Difficulty of exams	3.32 ± 1.15
Knowledge not necessary for a physician's career should not be taught	3.19 ± 1.38
Toilet cleanliness	3.18 ± 1.48

Figure 2

Item analysis of student satisfaction questionnaire. Numbers after each question represent time of completion (1 = December 2000, 2 = May 2001).

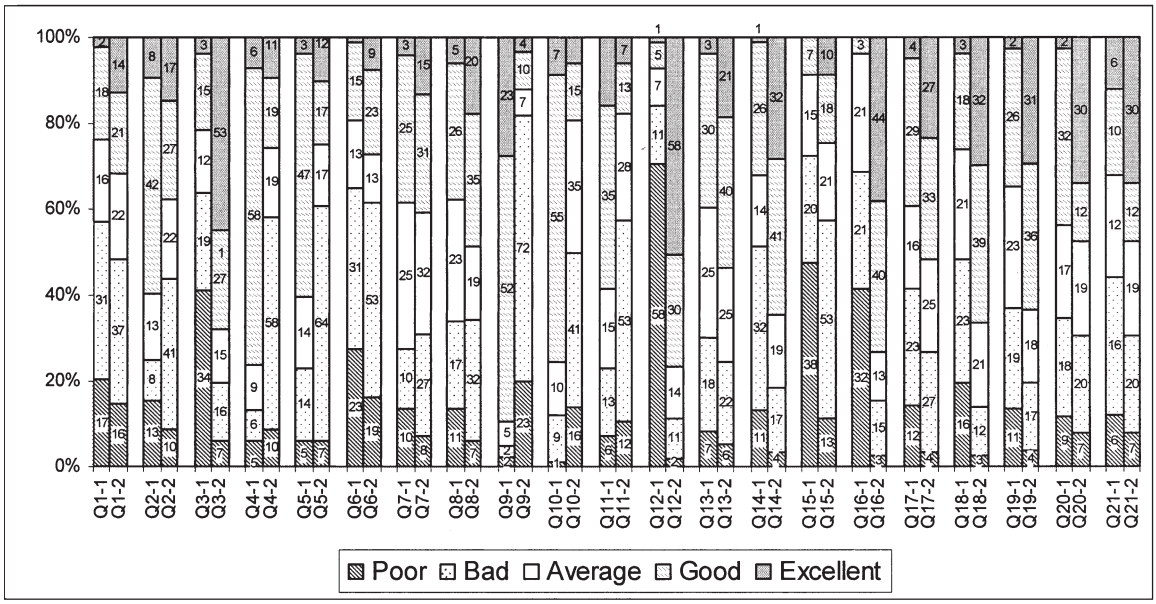

Table 2

Items and results of the quality evaluation questionnaire.

Questions related to education	mean score ± SD	
	December 2000	May 2001
Q1: Compulsory attendance at classes	2.49 ± 1.11	2.82 ± 1.26
Q2: Student evaluation system	3.29 ± 1.24	3.00 ± 1.23
Q3: Passing to next grade	2.20 ± 1.26	3.87 ± 1.28
Q4: Length of lectures	3.64 ± 0.94	2.68 ± 1.13
Q5: Length of breaks	3.35 ± 1.01	2.68 + 1.12
Q6: Amount of laboratory work	2.28 ± 1.10	2.57 + 1.20
Q7: Effectiveness of lectures	3.01 ± 1.10	3.16 ± 1.15
Q8: Scoring system	2.96 ± 1.15	3.26 ± 1.22
Q9: Announcement of exam results	4.10 ± 0.80	2.14 ± 0.95
Q10: Content of lectures	3.71 ± 0.82	2.61 ± 1.08
Q11: Flow of lectures	3.44 ± 1.16	2.56 ± 1.03
Q12: Effective use of classrooms	3.05 ± 1.03	3.42 ± 1.08
Q13: Physical state of classrooms	2.69 ± 1.09	3.71 ± 1.15
Questions related to social and environmental issues		
Q14: Environmental cleanliness	1.54 ± 0.97	4.14 ± 1.14
Q15: Canteen services	1.89 ± 1.01	2.64 ± 1.14
Q16: Opportunities for socialising	1.94 ± 0.92	3.93 ± 1.12
Q17: General state of buildings and land on campus	2.88 ± 1.18	3.45 ± 1.18
Q18: Cleanliness of dining room	2.62 ± 1.15	3.79 ± 1.08
Q19: Food quality	2.86 ± 1.09	3.69 ± 1.17
Q20: Quality of services in dining hall	3.00 ± 1.10	3.58 ± 1.07
Q21: Cleanliness of dormitories	2.88 ± 1.22	3.43 ± 1.37

Results

A total of 14 meetings were held between November 2000 and May 2001.

A total of 57 answers (42%) were collected from 135 students and classified to establish the problem pool. Fifty different problems were identified. Twenty-two problems (44%) were related to education and 28 (56%) to accommodation and other areas such as housing, meals or social activities. 93 students (68.89%) responded to the problem-grading questionnaire. Frequencies for each item were calculated. The first 10 problems in order of importance are shown in table 1.

Seven problems (cleanliness of toilets, canteen services, dining hall services, physical state of lecture rooms, educational system, founding a bridge club, education resources) were discussed during

the 14 meetings. Reports containing possible solutions to these problems were submitted to the dean. Among the educational problems, improvements were secured in the state of physical facilities such as cleanliness of toilets, canteen services, dining hall services and physical state of classrooms. As a social activity, a bridge club was established. Only minor changes could be achieved in the educational system. Discussions started regarding a more problem-based method instead of the classic lecture-based system, and a computer laboratory with internet access was offered to the student service as a contribution to educational resources.

84 students in December 2000 and 118 students in May 2001 completed the student satisfaction questionnaire under the authors' supervision. Scores assigned to each item were used to calculate a mean ± SD score (table 2, figure 2). Questionnaires with incomplete responses were excluded from the calculation. The mean ± SD was 2.80 ± 0.52 (n = 39) for the questionnaire administered in December 2000 and 3.20 ± 0.58 (n = 66) in May 2001. There was a statistically significant difference between these means (t = 3.506, p = 0.001).

Discussion

The study produced major improvements despite resistance and barriers. Most of the barriers were similar to those mentioned in the literature and ways of overcoming them were recommended [3, 8, 10].

The following successful results can be recorded:

Some problems were solved. Circle members discussed seven problems in 14 meetings. Some problems, such as classroom heating, were solved; others, such as inadequate toilet cleanliness, improved. There were also some problems where apparently nothing was achieved. For example, the teaching style of the faculty was discussed for three meetings and a report submitted to the dean suggesting adoption of a problem-solving model. No change resulted from this report, but it may have planted a new idea in the minds of faculty and administration. We believe this may contribute to overall learning quality in the long run.

Students became more motivated and involved in their education. It is the subjective view of the authors that the students who participated in quality circles acquired greater motivation to learn. This can be partly attributed to improvement in circle members' relations with faculty and management, though this finding needs further investigation and replication by well-designed studies.

QC members had the opportunity to be involved in academic research. They learned how to prepare questionnaires, conduct research and analyse the results. Circle members prepared two poster presentations for a national student congress at the university. Although not a primary aim of the study, this should be accepted as a beneficial side effect for the students who volunteered for QCs.

Students became more familiar with family practice as a specialty. Faculty role models and perceived prestige of family practice are important factors in the selection of family practice for specialty training [11]. We believe this activity could prompt the future selection of family medicine, a newly developing discipline in Turkey, as a specialty by some quality circle participants.

Discussion of quality in education as a concept was started among faculty members. Until the start of quality circles there was no official or voluntary activity among faculty or students relating to quality in learning. Planning of new projects which will contribute to quality in learning has already started among faculty.

The barriers quality circle members faced during their work were not very different from those observed in the literature. Negative attitudes among faculty, especially at the beginning, time pressures, insufficiency of resources and lack of quality as a concept among faculty members were the main obstacles. Initially the dean was highly sceptical of the quality circles' work. After several reports he realised the potential benefits and towards the end of the study even suggested a repeat of quality circles. The curriculum load of the students restricted meetings to only 45 minutes per week. This limited the depth of some discussions. To overcome this problem, quality circles should be incorporated into the academic curriculum. Finally, increased funds for circle studies would certainly promote participation and improve the quality of the product. A new area of activity for quality circles would be development of new instruments to increase teaching quality in medical education.

There were some limitations affecting the study. Circle members changed periodically to maintain motivation at a high level and give as many students as possible an opportunity to participate. However, this rotation affected the continuity and harmony of the circle's work. More frequent meetings would have led to increased work and possibly more objective outcomes. Administering the same student satisfaction questionnaire to first-year students in the following academic year, at the same intervals, would eliminate biases due to students becoming familiar with the conditions.

The authors recommend more research into the impact of QCs on quality of learning in different settings and classes. This study demonstrates that the use of quality circles among first-year medical students may improve quality of learning and student satisfaction. Future studies should employ more structured methods in order to minimise design biases and biases due to conflicting factors.

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References

1 Berkman U. Total Quality Management at the Health Sector. Haberal Teaching Foundation, Ankara: Baskent University Press; 1994.
2 Mullins D, Schmele JA. Reconsideration of the Quality circle process as a contemporary management strategy. Health Care Superv 1993;12:14–22.
3 Kelley CA, Brown MB. Quality circles in the hospital setting: their current status and potential for the future. Health Care Manage Rev 1987;12:55–59.
4 Nuhfer E. A Handbook for Student Management Teams. Denver: University of Colorado at Denver; 1992.
5 National Institute of Education. Involvement in Learning: Realizing the potential of American education. Washington DC: US Government Printing Office; 1984.
6 Cullen JA, Johnston LW. Using quality circles in the classroom to improve student learning and satisfaction. J Nurs Educ 1999; 38:368–70.
7 Lehman ME. Quality circles: their place in health care. Hosp Top 1986;64:15–9.
8 Gerlach FM, Künzi B, Fuchs HJ, Szeczsenyi J. Quality Circles in General Practice. 6th European Conference on General Practice and Family Medicine 2–6 July 2000, Vienna, Abstract Book, p. 99.
9 Ferris GR, Wagner JA. Quality circles in the United States: a conceptual reevaluation. J Appl Behav Sci 1985;21:155–67.
10 McNeely RL, Schultz B, Naatz F. Quality circles, human service organizations, and the law. Adm Soc Work 1997;21:65–71.
11 Pugno P, Schmittling GT, McPherson DS, Kahn N. Entry of US medical school graduates into family practice residencies: 2000–2001 and 3-year summary. Fam Med 2001;33:585–93.

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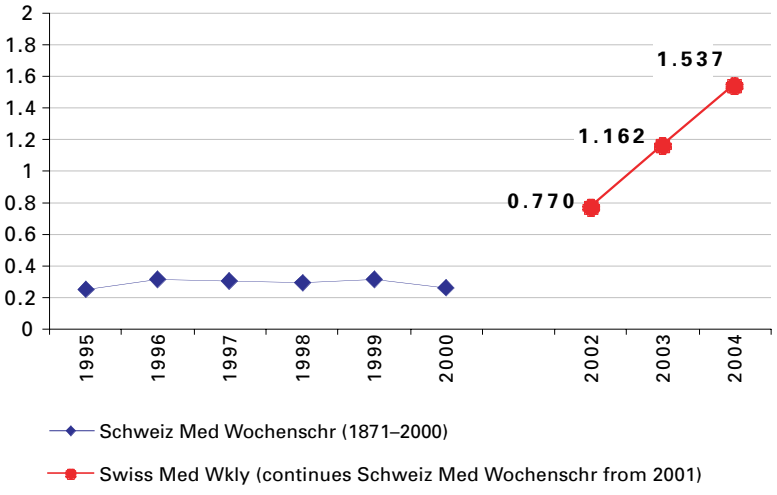

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