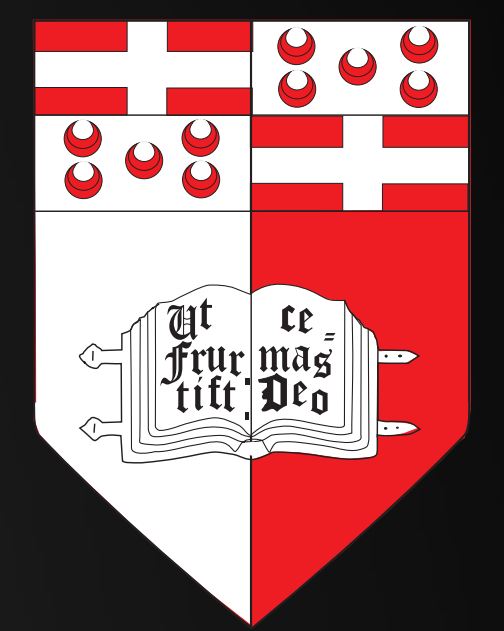


Development and evaluation of a quality system as an educational tool for pharmacy students in a laboratory setting



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Introduction

The implementation of a quality system to university-based laboratories gives significant value to the institution by introducing the concept of quality awareness among students¹, providing a positive impact on the research studies being performed² and enabling lecturing on aspects of quality assurance to be carried out from a more realistic point of view.¹

Pharmacy education must provide students with the requirements of working life.³ Quality systems are being implemented in a number of different pharmacy settings including industrial, hospital and community pharmacy, implying that graduates will encounter quality systems when they start working. Therefore, familiarisation with quality systems will not only help students perform activities correctly and safely within the laboratory during their time at university, but will also help improve their integration within the working environment.⁴

Aim

To develop, monitor and evaluate a quality system for pharmacy teaching laboratories.

Method

Setting

The study was undertaken in the 4 laboratories of the Department of Pharmacy at the University of Malta.

SOP Development

Three main groups of Standard Operating Procedures (SOPs) were developed:

- High level SOPs
- SOPs for Point-of-Care Testing (POCT) medical devices
- SOPs for laboratory equipment

Each SOP was divided into 9 sections: 'Scope', 'Objective', 'Definitions', 'Responsibility', 'Procedure', 'Precautions', 'References', 'Appendices' and 'Revision History'.

Each SOP procedure was also summarised into flowcharts.

SOP Implementation and Training

Developed SOPs were reviewed by a Laboratory Officer and authorised by the Head of the Department of Pharmacy. A 'Distribution Points' form was completed for each SOP to record the location of the authorised copies. Students were informed about the quality system through notices that were uploaded on the website of the Department of Pharmacy, where all implemented SOPs were also uploaded. Students were asked to read the SOPs prior to the commencement of their laboratory practical sessions or prior to using a POCT medical device or laboratory equipment on an individual basis and then to sign a 'Read and Understood' form for each SOP.

Laboratory Logbooks

A system of laboratory logbooks was developed, where each laboratory equipment and POCT medical device was assigned a separate logbook to record use, calibration and maintenance procedures.

Quality System Evaluation

A self-administered questionnaire was developed to assess the application and relevance of the developed quality system to pharmacy teaching laboratories. It consisted of 11 structured questions, with the first 2 questions used to collect demographic data whilst the remaining questions addressed the following aspects: SOP awareness, availability, usefulness, presentation and comprehensiveness, use of logbooks, relevance and educational value of the quality system. The last question was left open-ended for participants to suggest improvements. The questionnaire was tested for face and content validity and reliability. Questionnaire distribution was undertaken 2 months after all developed SOPs had been implemented. It was distributed to all second, third and fourth year undergraduate pharmacy students (N=106) and laboratory demonstrators (N=4), with a total of 110 participants. This student cohort was chosen to participate since these were students who had laboratory practical sessions as part of their academic curriculum. Data was manipulated using SPSS V 17.

Results and Discussion

--> A total of 41 SOPs were developed:

- ✓ 20 SOPs for POCT medical devices
- ✓ 21 SOPs for laboratory equipment

--> The content of the 5 high level SOPs, which were already implemented before commencement of this study, was revised and new versions were issued.

--> A total of 52 Laboratory Logbooks were issued.

--> Out of a total of 110 questionnaires distributed, 94 completed copies were returned obtaining a response rate of 85.5%.

--> Evaluation results:

- ✓ All participants were aware of the implemented quality system (n=94) and regularly filled in the appropriate laboratory logbooks during laboratory practical sessions (n=91).
- ✓ 92 participants (88 students, 4 laboratory demonstrators) agreed that the developed SOPs are important educational tools during laboratory practical sessions.
- ✓ 82 participants (79 students, 3 laboratory demonstrators) felt that the SOPs are improving the quality of laboratory practical sessions.
- ✓ 91 participants (88 students, 3 laboratory demonstrators) agreed that the overall implemented quality system is important to carry out procedures correctly and safely within the laboratory.
- ✓ 84 participants (81 students, 3 laboratory demonstrators) felt that the implemented quality system is a helpful tool for students to appreciate quality processes in pharmacy (figure 1).

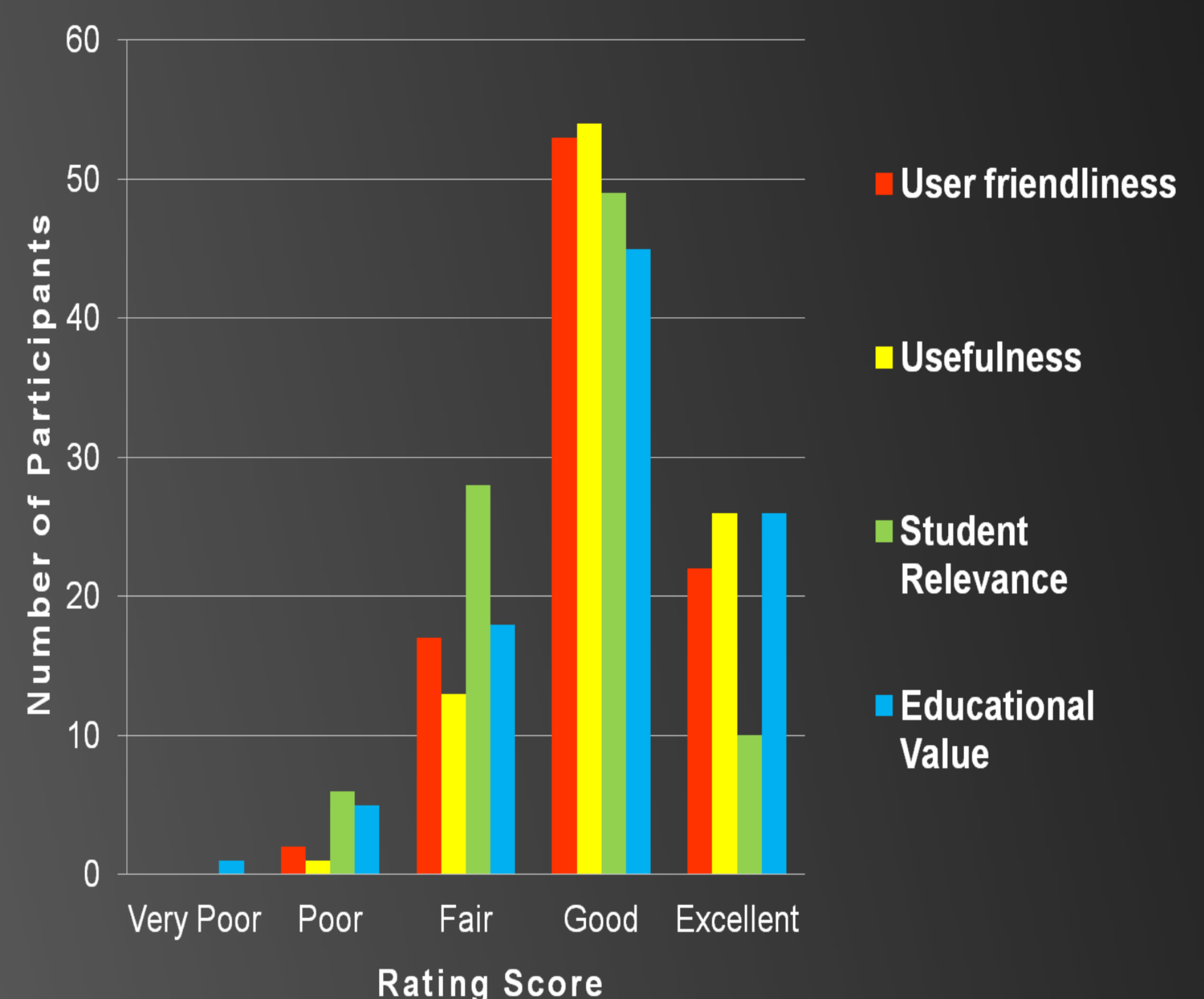


Figure 1. Usefulness and relevance of the overall quality system (n=94)

Conclusion

The majority of students had a positive overall perception of the implemented quality system, accepting its importance as an educational tool within the laboratory and its relevance to support them to carry out procedures correctly and safely.

Further promotion of the system will increase student awareness and familiarisation and will continue to encourage them to actively make use of the quality system within the laboratory setting.

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