



Major article

Evaluation of an ethical method aimed at improving hygiene rules compliance in dental practice



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Key Words:

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ethics
prospective observational study
medical team
dentistry

Background: The objective of this study is to determine the efficiency of an ethical method, based on a thought experiment in ethics, on hygiene rules compliance for dental health care team members.

Methods: This is a prospective study that assesses hygiene compliance in dental practice before and after a thought experiment in ethics, using 2 questionnaires. Participants included 130 clinician students in dentistry at Strasbourg University Hospital, France.

Results: The results emphasize a better implementation of hygiene rules after the thought experiment in ethics, when comparing the relative frequencies of completed hygiene items. A Wilcoxon signed-rank test shows significant differences between the first questionnaire and the second one after the thought experiment in ethics ($P < .001$).

Conclusions: This ethical method provides efficiency on hygiene rules compliance, which makes it beneficial to implement. However, far from being an absolute unit method, this thought experiment in ethics appears to be an original, supplemental, and complementary method.

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In 2008, a study led by the National Institute for Prevention and Health Education showed that 50% of the French population were afraid of contracting a chronic infectious disease (eg, HIV, hepatitis B virus) during their life.¹ Transmissions can occur when taking care of patients, for both patients and the medical team. Indeed, transmissions are more likely to occur if hygiene rules are not or only partially respected.

Dentists work every day for their patients with their instruments coming into contact with biologic fluids (blood, saliva, or pus) in a deeply septic environment. Their practice, and more generally any care practice, is concerned with contamination. In the environment of medical teams, several sources and vectors of contamination can be found.^{2,3}

The effectiveness of simple current hygiene rules has been proven. However, every year, new patients are victims of care-associated infections.^{4–6} The cause is therefore more closely related to a lack of motivation or awareness of ethical, health, and even regulatory issues rather than the appropriateness of the rules.^{7–12}

Indeed, each medical team member's responsibility in the occurrence of a health care-associated infection is usually presented in the context of a collective action. This may explain why medical teams have a lower sense of responsibility when they do not correctly follow hygiene rules. Hygiene and asepsis should result from an ethical mind-set because they are the cornerstone of the Hippocratic rule at least do no harm (*primum non nocere*).¹³

This study aims at evaluating the effectiveness of an ethical method of motivation for the application of the hygiene rules in dental practice. It consists in a thought experiment in ethics, designed in a deliberately simple manner to better highlight ethical and health issues. It will also point out the responsibilities related to the misapplication of hygiene rules.¹³

MATERIAL AND METHODS

Study design

The study design is a prospective study that assesses hygiene rules compliance in dental practice. It consists of a first questionnaire (Q1), a thought experiment in ethics, a second questionnaire (Q2), and an analysis and comparison of the answers.

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Conflicts of interest: None to report.

Study subjects

Subjects included 130 clinician students in dentistry of the Strasbourg University Hospital, France. The subjects are chosen because of their same institutional level of hygiene and ethics knowledge (fifth and sixth year of study in dentistry) and because it is essential to give young practitioners good habits in hygiene and ethics, especially during their learning and training processes.

Study genesis

The daily observation of clinician student's hygiene rules compliance shows items that present some difficulties. These difficulties are not so much related to the effectiveness of hygiene rules than to the awareness and motivation of the need for their application. For the purpose of continuously developing the safety of care, it appeared necessary to imagine a method to improve these points. The method needed to be applicable in an academic context, which means that it had to offer a clear educational facet and had to be implementable to a wide audience.

In a desire to deviate from punitive methods and with awareness that hygiene rules compliance is intimately associated with a strongly ethics-founded practice, we tried to motivate the medical team members via a method based on conceptual underpinnings, such as charity, responsibility, or dignity. We believe that these strong concepts will remain for a longer time in the students' mind.

Questions were developed regarding the clinician students' hygiene habits and then submitted to a panel of 10 students to evaluate their relevance, as a pilot test. Once validated, the study could begin.

Questionnaire and study chronology

Participants were informed that their responses would remain anonymous and that their participation was not mandatory but voluntary. The objectives of the study are explained.

The questionnaires focus on points of less observance of hygiene rules and are submitted through Google Docs (Google, Mountain View, CA), which allows the students to answer comfortably at home.

Q1

For Q1, a total of 14 questions were submitted to each participant, dealing with the following themes:

- No nail polish or false nails
- No jewellery or watch
- Hand hygiene before and after care
- No mask handling with gloves during procedures
- No putting on the mask with gloves
- No sterile equipment handling with soiled gloves
- Disinfection of particular devices (polymerization lamp or teeth shade guide)
- Unit and spittoon cleaning and disinfection
- Total immersion during pre-disinfection of instruments
- Waste disposal
- Needle handling security

Thought experiment in ethics

The thought experiment in ethics is aimed at making the participants aware of a given situation, confronting them with a similar situation to highlight the inequitable dimension of some deliberated acts or omissions. To do so, some concepts, such as charity, responsibility, or respect, are recalled.^{14,15}

The experience is as follows¹³: Imagine that you have 13¹ syringes before you of identical appearance. You have to inject the content of 1 of these 13 syringes to a person. However, among these 13 syringes, one could inoculate a pathogen to the person.

Two options are available to you: (1) you choose a syringe and directly inject the content or (2) with a sacrifice of 10 minutes and a moderate effort, you can multiply by 100² the number of syringes and still keep the single one containing the pathogen. The risk is then reduced to a value much closer to zero, and you inject the product.

What are you going to choose? Save some time and effort but keep a higher risk of transmission of the pathogen, or give a little of your time and energy to minimize the risk for the other person? If you choose solution 2, you must also choose to correctly achieve the sterilization of the instruments and properly follow hygiene rules. Indeed, for a sacrifice of a few minutes, you can significantly reduce the risk of care-associated infection. There are similar cases which require similar responses.^{14,16} The term sacrifice is voluntarily chosen because a better situation is expected after the action. Therefore, a sacrifice does not basically imply either a waste of time or a waste of money.

After responding to Q1, participants are invited to browse a 3-page Web site summarizing the thought experiment in ethics. The first page of this site describes the experience and the 2 options available to the participants, such as the situation previously described. The next page asks the participant to make a choice between the 2 options by clicking on the option of their choice. To underline the time needed for the reduction of the risk of contamination, clicking on solution 2 is only available after 30 seconds of waiting.

The last page of the Web site is specific to the chosen option. When the participant has chosen the first solution, the readers are reminded that they are responsible for their patients' health and that it is unethical not to take a few extra minutes to reduce the risk associated with the procedure if they are able to do so. The readers are invited to become aware of the consequences of their actions. When the participant has chosen the second solution, it is explained that this is exactly what should be done in accordance with current hygiene rules and that it is harmful to risk infecting a patient while you are able to significantly reduce the risk of care-associated infection.

Q2

After the thought experiment in ethics, 15 days are given for reflection time and regular work in the hospital. Then the original questionnaire is submitted a second time (Q2). The following 2 supplemental questions are added to this second round: (1) Did this thought experiment in ethics have an impact on your hygiene habits? (only 1 possible answer) (Fig 1); and (2) What is (are) the reason(s) leading to an impediment to hygiene measures? (several possible answers) (Fig 2).

The students are invited to reply only on the basis of the attitudes and decision-making they have followed during the last 15 days of work, meaning the time from their participation to the thought experiment in ethics.

Processing data

The results were generated by Google Docs in the form of tables. Relative frequencies were then given. Moreover, for each question, 5 answers were possible, and a score was assigned to each of them

¹Number chosen in relation to the average rate of patients contracting a nosocomial infection at the hospital (7.6%).⁵

²Arbitrarily chosen number, simply highlighting the fact that the risk is significantly decreased.

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