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Successful experience of using active learning methodologies to raise handwashing awareness

EXPERIENCE REPORT

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SUMMARY

Introduction: The correct hand hygiene technique is recommended to prevent the spread of infectious diseases. **Objective**: To use active learning methodologies to raise awareness about hand washing and assimilate the correct technique in health education actions developed in the Health in Schools Program. **Method**: The actions were carried out in schools and daycare centers in the eastern region of Belo Horizonte. Participants stained their hands with fluorescent paint and glitter representing the transient and resident microbiota, washed them as usual, and inspected them under black light. Academics instructed on the importance and correct way of hand hygiene, and participants performed a simulation of the technique. Folders were distributed for consultation, and posters were posted over sinks. **Results**: Nine workshops were held in six public schools with approximately 50 students (16 to 21 years old) and 40 workers (27 to 64 years old). The moment of greatest interest was during hand inspection. Most students and only two workers demonstrated prior knowledge of the technique. **Conclusion**: Using active methodologies increases the potential of educational action by encouraging participants to take the lead in assimilating concepts and meanings about the factors that affect their health. Teaching resources that are easy to make and allow interaction with the target audience, such as those used in this

project, should be replicated in other schools and in different social spaces for health education actions.

Keywords: Handwashing; Educational Activities; School Health Promotion.

RESUMO

Introdução: A técnica correta de higienização das mãos é preconizada para evitar a propagação de doenças infecciosas. Objetivo: Utilizar metodologias ativas de aprendizagem para conscientização da lavagem das mãos e assimilação da técnica correta em ações de educação em saúde desenvolvidas no Programa Saúde na Escola. **Método:** As ações foram realizadas em escolas e creches da regional leste de Belo Horizonte. Os participantes sujaram as mãos com tinta fluorescente e glitter representando as microbiotas transitória e residente e realizaram lavagem de maneira habitual e inspecionaram sob luz negra. Acadêmicos instruíam sobre a importância e maneira correta de higienização das mãos e os participantes realizaram a simulação da técnica. Foram distribuídos folders para consulta e cartazes afixados sobre as pias. **Resultados:** Foram realizadas nove oficinas em seis escolas públicas com aproximadamente 50 alunos (16 a 21 anos) e 40 trabalhadores (27 a 64 anos). O momento de maior interesse foi durante a inspeção das mãos. A maioria dos alunos e apenas dois trabalhadores demonstraram conhecimento prévio sobre a técnica. **Conclusão:** A utilização de metodologias ativas aumenta o potencial da ação educativa ao estimular o protagonismo dos participantes para a assimilação de conceitos e significados sobre os fatores que interferem na sua própria saúde. Recursos didáticos de simples confecção e que permitam a interação do público-alvo, como a utilizada nesse projeto deveriam ser replicados em outras escolas e em diferentes espaços sociais para ações de educação em saúde.

Palavras-chave: Lavagem de Mãos; Atividades Educativas; Promoção da Saúde Escolar.

INTRODUCTION

Handwashing is a fundamental hygiene practice that has been widely recognized as one of the most effective measures to prevent the spread of infectious diseases. It is known that transmission of pathogens through hands is one of the main ways in which diseases spread, especially in hospital and healthcare settings, where exposure to pathogenic microorganisms is more common [1].

In addition to these environments, the literature recommends handwashing to be incorporated by the entire population into their daily routine since it is a simple and accessible measure to prevent different types of infectious diseases. The World Health Organization (WHO) recommends that the handwashing technique be performed in six steps to ensure adequate hygiene [2]:

1. Wet your hands with clean running water and apply enough soap to cover all surfaces of your hands;
2. Rub your hands together, interlacing your fingers, palms, back, nails, and wrist. Make circular, frictional movements for at least 20 seconds;

3. Rub the fingertips of your right and left hands against the opposite palm in a back-and-forth motion;
4. Rub your right thumb with the palm of your left hand in a circular motion. Repeat the procedure for your left thumb;
5. Rub the fingertips and nails of your right hand against the palm of your left hand, making a circular motion. Repeat the procedure for your left hand;
6. Rinse your hands with clean running water, completely removing the soap, and dry them with a clean towel or paper towel (WHO, 2005, p. 18).

This technique is recommended to prevent the transmission of microorganisms and keep hands clean in all situations, whether in healthcare settings or everyday life. The recommendation to use this technique became even more widespread during the pandemic caused by the coronavirus, and in this context, raising awareness among the population about the importance of the correct handwashing technique has been essential as a measure to prevent COVID-19[3]. Despite being a simple measure, many people still do not have the habit of washing their hands correctly or frequently enough, which increases the risk of transmitting the coronavirus and other microorganisms. In this sense, the population must be aware of the technique recommended by the WHO and the importance of incorporating it into their daily routine, especially at crucial moments, such as before handling food, after using the bathroom, after handling garbage, after coughing or sneezing, among others [4].

According to the literature, educational interventions aimed at raising awareness among the population about the importance of handwashing and training in the steps recommended by the WHO have a positive impact on knowledge and assimilation of the correct technique [1]. When these interventions are carried out in schools, environments that are conducive to the transmission of infectious diseases [5], attention should be paid to the importance of being carried out with the different target audiences that make up the school community: students, teachers, and cafeteria and general service workers, and the choice of the teaching resource that will be used [6].

Brazil has the School Health Program (SHP), developed from an initiative of the federal government in partnership with states and municipalities, which aims to promote health and quality of life in the school community of public educational institutions. The program encompasses educational, preventive, and health promotion actions, which include topics such as healthy eating, physical activity, prevention of sexually transmitted diseases, oral health, eye health, among others. The interventions are carried out in schools, in conjunction with the Family Health Team (FHT), and aim to develop actions for health promotion, prevention, and care, as well as contributing to the formation of citizens who are more aware and responsible for their own health [7].

Because of this, the objective of the "One hand washes the other" Project was to use active methodologies to raise awareness about hand washing and assimilate the correct technique in health education actions developed in the Health at School Program.

EXPERIENCE REPORT

During the months of September to November 2022, students of the second and third semesters of Medicine at a private college in Belo Horizonte, during classes in the Discipline of Practices in Public Health I and II, implemented the Project "One hand washes the other", which consisted of nine workshops, held in six public schools in the East Region of Belo Horizonte, with the participation of approximately 50 high school students and 40 school workers, who are responsible for handling food (canteens) and handling garbage (general service assistants).

This project was agreed upon with the management of the Basic Health Unit (BHU) as one of the activities to be developed by academics in schools within the BHU's coverage area in collaboration with the FHT and its responsibility with the SHP. As one of the topics listed by the City of Belo Horizonte (PBH) as mandatory to be addressed by the SHP in 2022 was the prevention of COVID-19, it was decided to address the importance of handwashing and training the correct technique with the participants.

In the first part of the workshops, the academics explained to the participants in a very simple way that our hands are colonized by microorganisms (viruses, fungi, and bacteria), including those that live in the deepest layers of our skin (resident microbiota) and those acquired during contact with other people, surfaces or objects (transient microbiota) [8].

The resource used to simulate the presence of these microorganisms playfully was the application of phosphorescent paint and glitter suitable for body painting on the hands and wrists. This type of practice with paint is commonly used, as the students reported having carried out a similar activity in a college course. Although the materials were non-toxic, the participants were asked beforehand if they had any type of allergy or contact dermatitis (figure 1).

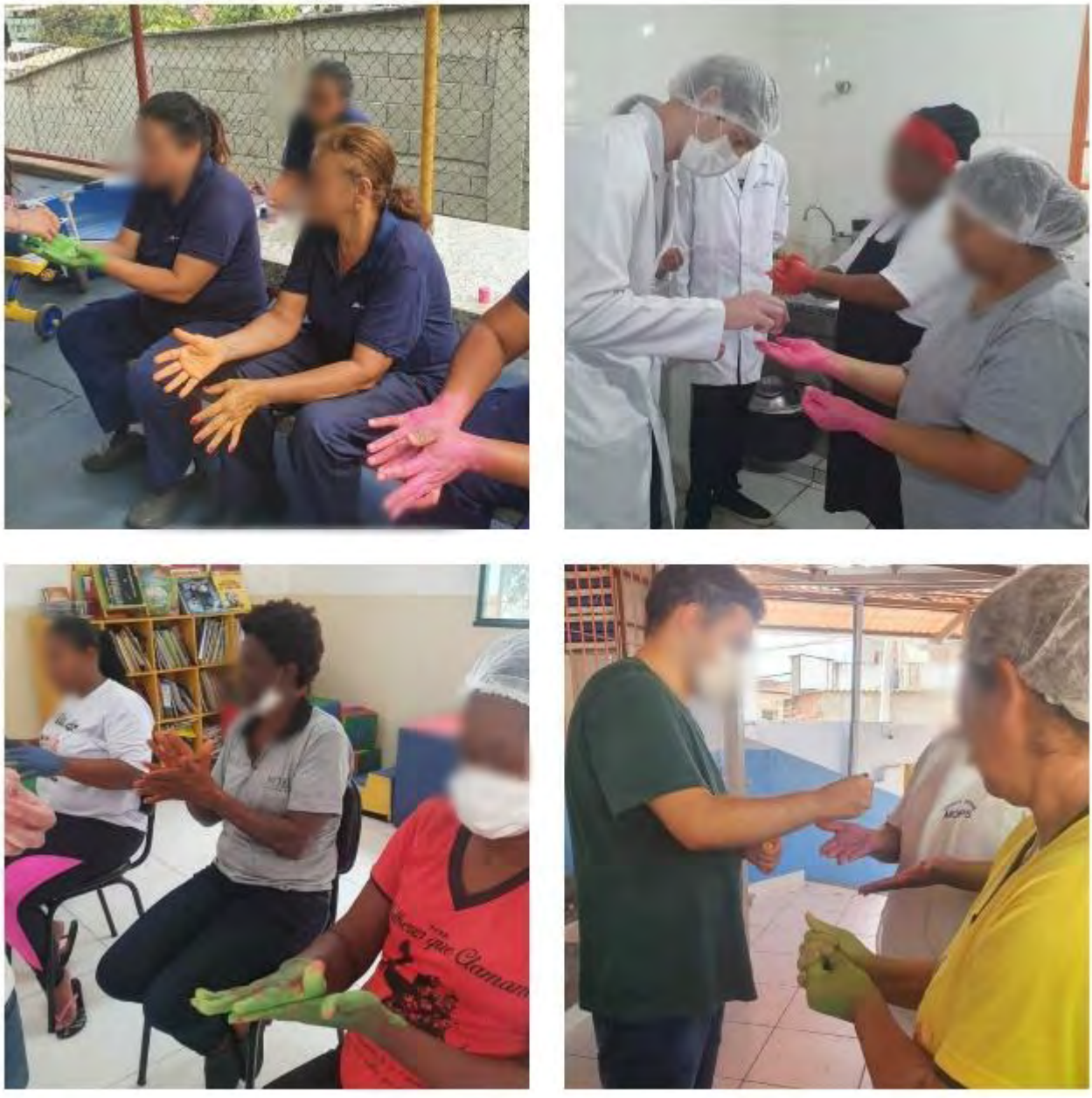

FIGURE 1 – ACADEMICS APPLYING PHOSPHORESCENT PAINT AND GLITTER TO PARTICIPANTS' HANDS DURING THE EXTENSION PROJECT "ONE HAND WASHES THE OTHER". SOURCE: PERSONAL ARCHIVE

In the second part of the workshop, participants were invited to clean their hands with water and liquid soap in the way they were used to and to dry them with disposable paper towels.

To understand the adhesion of microorganisms to the skin, participants were invited to perform the inspection under black light, inside a dark box called the "Truth Box", which had an entrance for the hands and an opening at the top. In this sense, the paint used needed to be phosphorescent since the black light was the great differential of the proposed workshop.

As soon as the participants saw the fluorescent traces under their skin and nails, the academics informed them that the paint would correspond to the transient microbiota that is easier to be removed by the correct hand hygiene technique and that is generally pathogenic, that is, it has the potential to cause diseases, such as the coronavirus that causes COVID-19. Furthermore, the glitter corresponds to the resident microbiota that is more resistant to removal with just soap and water and that generally does not cause harm to the host (figure 2).

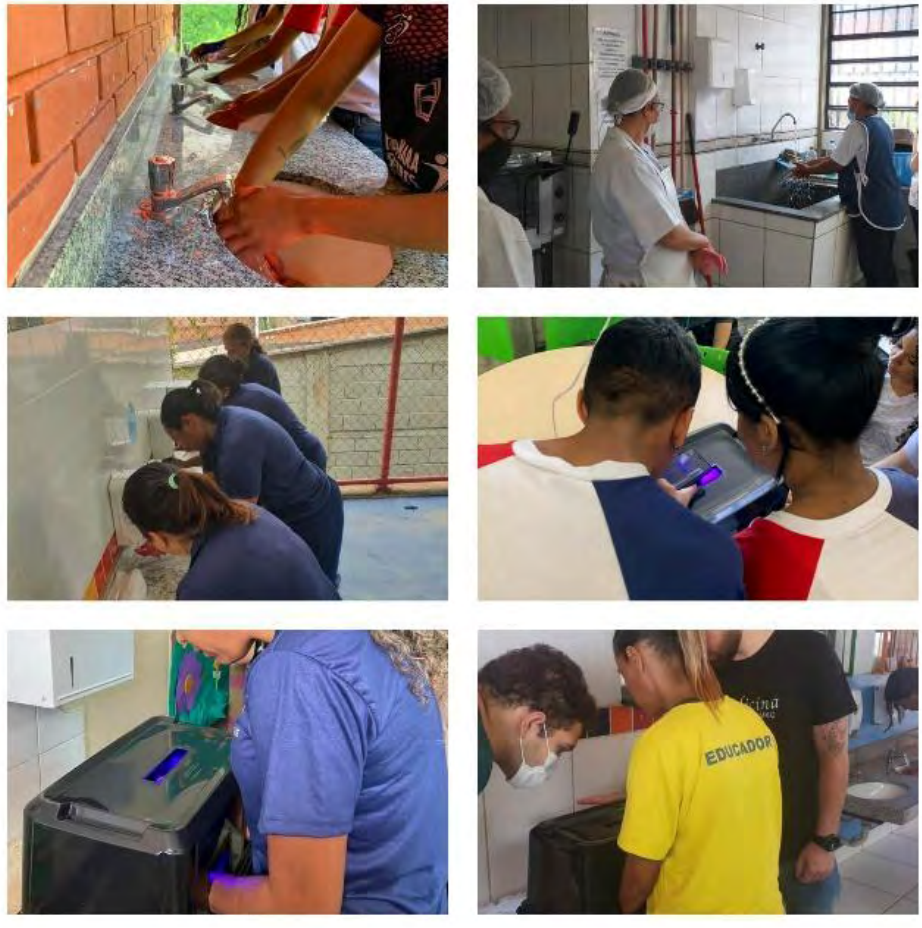

FIGURE 2 – PARTICIPANTS WASHING THEIR HANDS AND INSPECTING THEM UNDER BLACK LIGHT DURING THE "ONE HAND WASHES THE OTHER" EXTENSION PROJECT
SOURCE: PERSONAL ARCHIVE

FIGURE 3 – FINAL STAGES OF THE WORKSHOPS: GAME, SIMULATION OF THE TECHNIQUE, AND FIXING OF THE FOLDERS DURING THE EXTENSION PROJECT "ONE HAND WASHES THE OTHER". SOURCE: PERSONAL ARCHIVE

In the third stage of the workshop, the students provided instructions on the correct technique recommended by the WHO, and the participants performed a simulation of the correct way to wash their hands. To reinforce the importance of the appropriate handwashing technique, leaflets were distributed for reference, and posters were placed on sinks in schools.

At the end of the workshops, two types of assessments were carried out: a discussion group with school workers to identify their impressions of the active methodology used in the workshops and a question and answer game carried out with the students to measure the knowledge acquired about the handwashing technique (Figure 3).

DISCUSSION / THEORETICAL REFLECTIONS

University extension activities are decisive contributions to student education through direct contact with contemporary issues, enabling the enrichment of the student experience in theoretical and methodological terms [9]. The disciplines of Practices in Public Health I and II provide medical students with the experience of planning and implementing extension actions in the territories covered by the UBS based on demands presented by the community or observed from the Situational Diagnosis carried out by the students.

The project "One hand washes the other", developed by students in the context of the SHP, used active methodologies to overcome the traditional and passive way of teaching health, thus encouraging participants to build their knowledge. The "Truth Box" was a playful educational tool created to raise awareness among participants about the importance of biosafety and the correct handwashing technique. The box was built with simple materials that were easy to find (dark plastic box, light bulb, socket, and plug), and the black light inside it caught the attention and curiosity of both young people and adults. Another interesting fact was the participant's behavior during the "game" of getting their hands dirty. Most chose a color they liked the most and had fun using glitter and posing for photos, a situation that occurred in both groups of students and school workers. The reaction of astonishment, surprise, and even shame after washing and the realization that some areas were not properly cleaned were very important in demonstrating that the practice of washing hands is not simply using soap and water in any way but rather a technique that must be carried out correctly to ensure the elimination of microorganisms present on the hands.

The use of active methodologies, such as the "Truth Box", has proven to be an effective strategy for promoting health education both in institutions providing health services [10] and in school environments.

Mouta *et al.* (2020) reported a similar experience carried out by medical students in public schools in the municipality of Parnaíba in the state of Piauí. As the target audience was children aged 5 to 12, the group included, in addition to the activity of getting their hands dirty with neon paint and using a black light box, the adaptation of the classic play known as "The Three Little Pigs", in a narrative focused on the importance of personal hygiene [11]. As the participants in the "One Hand Washes the Other" Project were young people aged 16 to 21 and workers aged 27 to 64, other teaching resources were used to systematize and evaluate the workshops. For the adolescents, the playful methodology chosen was to carry out a game, considered in the literature as an educational instrument potentially capable of contributing both to the development of education and the construction of health knowledge [11]. According to Francisco *et al.* (2020), "games in health education activities are seen as a fun, stimulating, interactive, innovative and illustrative activity, which respond to the dual task of clarifying doubts and facilitating learning". However, discussion groups were held for the workers, and pamphlets and folders were handed out for consultation. Regarding this group of participants, it is worth highlighting that a major obstacle to carrying out the actions was the

lack of availability of the cafeteria professionals to stay longer in the workshops due to their tasks of preparing and serving meals to the schoolchildren.

It is observed that the use of active methodologies seeks to actively involve participants in the learning process, stimulating reflection, dialogue, and the joint construction of knowledge. The "Truth Box" is an example of an active methodology that can raise awareness about the importance of biosafety and the correct handwashing technique. In addition, other active methodologies, such as games, simulations, and dramatizations, can be used to promote health education more playfully and engagingly. These strategies allow participants to be the protagonists of the educational process, which can lead to greater knowledge retention and the adoption of healthier behaviors. Proof of this was the interest of the medical students in also getting their hands dirty with paint to visualize under the black light. However, since the students already knew the objectives of the activity, the proposal was to inspect them after washing their hands using the technique recommended by the WHO. Korb *et al.* (2015) carried out a similar activity with nursing students enrolled in the disciplines of Microbiology, Semiology, and Semiotics at the State University of Santa Catarina. The report of the experience emphasized that the integrative activity demonstrated to the students the importance of correct hand washing to reduce infections and risks to patients and, to the professors, the feasibility of carrying out this type of activity to integrate the disciplines and knowledge between the different areas of the nursing course [13].

The "One Hand Washes the Other" Project allowed medical students to realize that the SHP is a program that should encompass the entire school community and not just students. Regarding the prevention of COVID-19 and other communicable diseases, it was observed the importance of raising awareness among everyone to master the correct handwashing technique and develop the habit. Handling food and garbage is an activity with a high potential for contamination by microorganisms that can be harmful to health. Therefore, school workers who carry out these activities must be well-informed and trained on the importance of handwashing and the correct technique to perform it. Raising awareness about the technique among school workers makes it possible to reduce the risk of contamination by microorganisms that can be transmitted by food, water, or contact with contaminated surfaces [13,14].

Another important perception was about the methodology used in the workshop, classified by the students as interactive and playful. The students compared the actions with others they had already carried out in other disciplines and realized that the use of active methodologies breaks with the transmission of knowledge normally carried out through texts or long lectures, situations that do not capture the interest of the public. In the actions carried out, the public actively participated in the proposed activities and understood the importance of the WHO technique, in addition to identifying the most critical areas of the hands (such as under the nails) to which greater attention should be paid during the practice.

An interesting observation was how the target audience received the Project, considered by the students as an important indicator. In this sense, given the attention, participation, and interest of the public in the handwashing technique and the proposed dynamics, it was possible to observe that the action was relevant for the school community, which could have a positive impact on their hygiene habits. It was observed that, at least immediately after the intervention, there was memorization of the technique and concepts. In this sense, an important limitation of this study lies in the difficulty of long-term monitoring to assess the retention of the acquired knowledge. Since the Project was carried out to meet an SHP agenda, it was possible to carry it out only during the course of the discipline. In addition, the students who carried out the actions no longer have a connection with the UBS and the schools in the area covered.

However, the academics considered the exchange of knowledge that happened during the extension experience at the SHP to be positive, through workshops with different target audiences in different educational institutions and using active methodologies such as games and the "Truth Box". It became clear that the use of active methodologies increased the potential of the educational action to produce improvements in the health-disease process of the assisted school community, stimulating the construction and resizing of concepts and meanings about the factors that interfere with health. According to Araújo *et al.* (2013), "the university has perceived the school space as an environment conducive to the clarification and exchange of knowledge, favorable to the stimulation of healthy habits and practices" [15].

CONCLUSION

Health Education is a tool to strengthen the construction of self-care practices, and outreach activities provide medical students with the opportunity to experience the exchange of knowledge with the community regarding health promotion and prevention practices. In this context, the Health in School Program is an important tool for directing university outreach actions in a context distinct from health spaces entering the educational area.

The use of active methodologies such as the "Truth Box" used in the "One Hand Washes the Other" Project increases the potential of the educational action by encouraging the participants to take the lead in assimilating concepts and meanings about the factors that interfere with their health. The use of teaching resources that are easy to make and allow interaction with the target audience, such as that used in this project, should be replicated in other schools and different social spaces for health education actions.

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