Volume 5, Number 1, May 2024

Journal of Vocational Nursing
https://e-journal.unair.ac.id/JoViN

THE HABIT OF USING HAND SANITIZER AMONG TEENAGERS AND ITS EFFECTIVENESS COMPARED TO WASHING HANDS – A LITERATURE REVIEW

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Literature Review

A B S T R A C T

***Introduction**: The spread of infectious diseases occurs when disease-causing agents, such as bacteria, viruses, or germs move and infect from one person to another. Teenage is a phase that is very vulnerable to contracting infectious diseases because it is at a stage of physical development, emotional changes, and increased social relationships. One practical way to prevent infectious diseases is to kill disease-causing agents by washing hands. However, its use is often replaced with a more realistic hand sanitizer. For this reason, this research will compare the efficacy of hand sanitizers and hand washing specifically among teenage populations. **Methods**: This research is a literature study that uses secondary data from publications published in 2007-2024 and is relevant to the topic of discussion. Of the 16,800 articles according to keywords, 8 articles were found that met the criteria for further discussion. **Results**: The results of the eight journals selected according to the requirements showed that 3 journals stated that using hand sanitizer was more effective than washing hands. Meanwhile, 5 other journals stated that washing hands was more effective than hand sanitizer. Because, there are still remaining germs, bacteria, and viruses stuck to the hands. Moreover, hand sanitizers are not able to clean the deepest layers of the skin, and long-term use also makes the skin dry and irritated because hand sanitizers contain quite high amounts of alcohol. **Conclusions**: For this reason, teenagers are expected to prioritize washing their hands with soap and running water rather than using hand sanitizer.*

A R T I C L E I N F O

Received February 22, 2024
Accepted April 27, 2024
Online May 30, 2024

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Keywords:
Hand Sanitizer, Teenagers, Washing Hands

INTRODUCTION

In an era defined by unprecedented global health crises, the significance of personal hygiene practices cannot be overstated. Among the many habits advocated for disease prevention, the use of hand sanitizers has gained prominence, especially among teenagers (Nawangwulan et al, 2022). This demographic, often characterized by active social lives and bustling environments like schools, presents a unique case study for examining the effectiveness of hand sanitizers compared to traditional hand-washing methods (Muntahaya et al., 2021). This introduction seeks to explore the prevalence of hand sanitizer use among teenagers and evaluate its efficacy in combating pathogens, drawing insights from recent research within the past decade.

In recent years, hand sanitizers have become ubiquitous in various settings, from classrooms to recreational spaces (Duane et al, 2022; Santos et al., 2017; Singh et al., 2020). Their appeal lies in their convenience and accessibility, offering a quick solution for cleansing hands in situations where soap and water may not be readily available (Kweon et al., 2022; Lopez et al., 2023). Teenagers, in particular, have embraced the use of hand sanitizers as part of their daily routine, often carrying portable bottles to maintain hygiene throughout the day (Duane et al, 2022; Santos et al., 2017). This trend reflects a broader cultural shift towards prioritizing preventative measures against infectious diseases.

However, the effectiveness of hand sanitizers in comparison to traditional hand washing remains a subject of debate. While sanitizers offer convenience, their ability to eliminate a wide range of pathogens has been scrutinized. Some studies suggest that hand sanitizers with at least 60% alcohol content can effectively reduce the bacterial and viral load on hands (Duane et al, 2022; Pratinidhi et al., 2019). Nevertheless, their efficacy against certain pathogens, such as norovirus, may be limited. Additionally, concerns have been raised regarding the development of antimicrobial resistance with frequent sanitizer use (Tuladhar et al., 2015).

Contrastingly, hand washing with soap and water remains the gold standard for hygiene promotion (Sagong et al., 2022). The mechanical action of scrubbing combined with the antimicrobial properties of soap is highly effective in removing dirt, oils, and a broad spectrum of pathogens from the skin's surface (Breidablik et al., 2023: Hayes et al., n.d.; Olena Doronina et al., 2017; Vessey et al., 2007). Furthermore, hand washing has been endorsed by public health authorities as a fundamental practice for preventing the spread of infectious diseases, including respiratory infections and gastrointestinal illnesses.

Recent research has sought to compare the efficacy of hand sanitizers and hand washing specifically among adolescent populations. Studies have examined factors such as adherence to hygiene practices, microbial load reduction, and rates of illness transmission in school settings. While findings vary, there is consensus that both hand sanitizers and hand washing play crucial roles in promoting hygiene among teenagers. However, the context in which each method is employed, as well as individual behaviors and environmental factors, can influence their overall effectiveness. This research discusses "The habit of using hand sanitizer among teenagers and its effectiveness compared to washing hands."

MATERIALS AND METHODS

This research is a literature study that uses secondary data from publications published in 2007-2024 and is relevant to the topic of discussion. These articles come from three different database Scopus, Google Scholar, and Pub-Med. This research uses the search term "habit of using hand sanitizer among teenagers and its effectiveness compared to washing hands." In selecting articles, inclusion criteria were determined to filter the results of the articles found. The inclusion criteria for literature studies are studies that use quantitative and qualitative studies, studies published in the last 2007-2024, articles published in national and international journals, studies conducted at home and abroad, articles that use Indonesian and English, as well as articles that can be downloaded in full paper. The next stage,vassessing the quality of the article, is carried out using the Critical Appraisal instrument from the Joanna Briggs Institute in research with the Checklist for Qualitative Research. The article will be declared unfit for synthesis if the assessment results show a value of ≤ 20, and the article will be declared suitable for synthesis if the assessment results show a value of > 20. The search strategy for literature results is shown in the following flow diagram. Of the 16,800 articles according to keywords, 8 were found that met the criteria for further discussion.

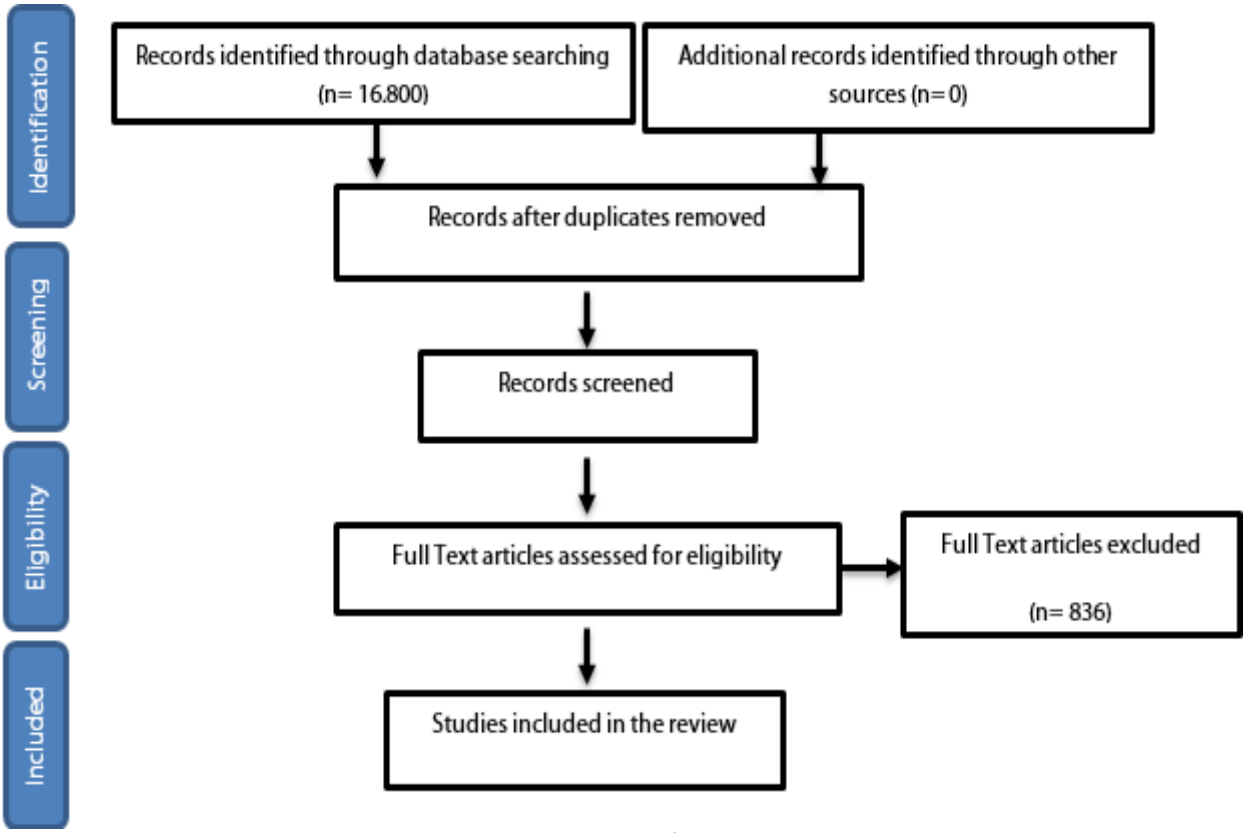

Figure 1. PRISMA flow diagram

RESULTS

Table 1. Diagnostic of included studies

No	Title and Year	Ref	Research Contents
1.	Effectiveness of a Multifactorial Handwashing Program to Reduce School Absenteeism Due to Acute Gastroenteritis	(Azor-Martinez et al., 2014)	Students are instructed to adopt the practice of cleansing their hands after using the restroom and if their hands are obviously soiled. In certain circumstances, they are also familiar with the proper utilization of hand sanitizer. Hand sanitizer is deemed efficacious when used as a supplementary measure to handwashing with soap. This endeavor is highly effective in decreasing the incidence of school absences caused by acute gastroenteritis.
2.	Hand Sanitiser Provision for Reducing Illness Absences in Primary School Children: A Cluster Randomised Trial	(Priest et al., 2015).	This study aims to determine if promoting additional hand hygiene by providing alcohol-based hand sanitizer in classrooms will effectively reduce illness-related absences among school students, as compared to regular hand hygiene practices with soap and water, mostly in school toilets. The study found that providing an alcohol-based hand sanitizer dispenser in classrooms did not effectively reduce rates of absence episodes caused by respiratory or gastrointestinal illnesses, nor did it decrease the duration of illness or absence episodes.
3.	Hand Hygiene Habits of Ghanaian Youths in Accra	(Oppong et al., 2019).	Hand washing with soap is widely recognized as the major approach for managing infections. Alcohol-based hand sanitizers (ABHS) have been proven effective in inactivating several types of germs.
4.	Comparing hand washing to hand sanitizers in reducing elementary school students' absenteeism	(Vessey et al., 2007).	Hand sanitizers are an effective alternative to hand washing for maintaining hand hygiene and can offer additional benefits in educational settings.
5.	Rinse-free hand wash for reducing absenteeism among preschool and school children	(Munn et al., 2020).	The assessment of absenteeism due to acute gastrointestinal sickness suggests that the use of rinse-free hand washing can decrease absenteeism (six days absent per 1000) compared to individuals in the 'no rinse-free' group (eight days absent per 1000). There is likely minimal or no distinction in terms of adverse skin reactions between rinse-free hand washing and the 'no rinse-free' group.
6.	Relationship between handwashing practices and infectious diseases in Korean students	(Zhang et al., 2015).	Girls who used hand sanitizer instead of washing with soap had a higher incidence of the common cold compared to boys. Additionally, pupils who washed the back of their hands more frequently were less likely to contract the common cold compared to those who did not wash the back of their hands.
7.	Study of knowledge and practices related to handwashing in school going children of a rural community	(Pratinidhi et al., 2019).	The students exhibited diverse preferences in terms of the material they utilized for handwashing. Approximately 14% reported using solely clean water for rinsing their hands, while 28% utilized bathing soap. Additionally, 33% employed medicated soap, and 15% opted for hand washes such as sanitizers and alcohol-based cleansing agents. The pupils have a preference for utilizing water and soap for the purpose of hand washing and possess a clear understanding of the significance of hand hygiene in order to mitigate the risk of various diseases.
8.	Effectiveness of non-pharmaceutical measures in preventing pediatric influenza: a case–control study	(Torner et al., 2015).	Basic infection control techniques, such as practicing good hand hygiene (including frequent hand washing, using alcohol-based hand sanitizers, and washing hands after coming into contact with contaminated surfaces), have been scientifically demonstrated to be successful in minimizing the transmission of infections in schools and preventing their spread to households. Regular hand hygiene practices should be advised to avoid the spread of influenza in the community, particularly among school-aged individuals.

The discussion on hand hygiene practices among teenagers is complex, involving various perspectives and research findings. Initially, there's an emphasis on promoting handwashing habits among teenagers as students, especially after using the toilet or when hands are visibly dirty. Hand sanitizer is recognized as beneficial when used alongside hand washing, aiding in reducing school absenteeism due to gastroenteritis. However, recent studies question the effectiveness of alcohol-based hand sanitizers provided in classrooms, as they didn't significantly reduce illness-related absences. Despite this, hand sanitizers are acknowledged for their antimicrobial efficacy, complementing hand washing, particularly in situations where soap and water aren't easily accessible. The debate also extends to comparing the effectiveness of hand sanitizers versus hand washing in preventing illness transmission and absenteeism, with conflicting evidence on their impact. Teenagers display diverse preferences for hand hygiene products, with many favoring water and soap. Overall, while hand sanitizers are convenient, their effectiveness alone is uncertain. The results of the eight journals that have been selected according to the criteria show that 3 journals say that there is more effectiveness from the habit of using handsanitizer than hand wash for preventing disease, while 5 other journals say that hand wash has still become the gold standard for removing dirt and also killing germs, viruses, and bacteria.

DISCUSSION

This review examined the efficacy of incorporating hand sanitizer as a habitual practice among teenagers, in comparison to handwashing. The reference provided includes samples of individuals who currently possess the practice of utilizing hand sanitizer (Oppong et al., 2019; Torner et al., 2015; Zhang et al., 2015), as well as individuals who have just adopted the practice of using hand sanitizer in addition to hand washing for a specific period of time (Azor-Martinez et al., 2014; Munn et al., 2020; Pratinidhi et al., 2019; Priest et al., 2015; Vessey et al., 2007), The review findings indicated that hand washing has the ability to diminish the quantity of germs present on the hands, hence decreasing the occurrence of diarrhea, respiratory infections, and school absence.

Recent research indicates that the usage of alcohol-based hand sanitizers is increasingly recognized as a crucial method for controlling infections due to their quick and effective ability to eliminate bacteria. Choosing hand sanitizers that have the correct and scientifically confirmed components is of utmost importance in combating COVID-19 (Marumure et al, 2022). In contrast to Marumure's claim, the research findings indicate that hand sanitizer is as ineffective in eradicating germs, bacteria, and viruses compared to washing hands with soap. According to (Hasibuan, 2022) remark, hand sanitizer has the ability to hinder the growth of Staphylococcus aureus with antibacterial activity that ranges from weak to extreme. According to (Nakoe et al., 2020) using hand sanitizer is more effective and convenient than washing hands with water and soap. In addition, (Dwi Elisanti et al., 2019) conducted studies indicating that the use of 70% alcohol does not completely eradicate all microorganisms present on banknotes. As per the findings of (Lusiana et al., 2020) using alcohol as a hand sanitizer on a regular basis is not as safe for skin health. This is due to the flammability of alcohol and the fact that frequent use can lead to dryness and irritation of the skin. The research findings indicate that a highly efficient method to eliminate germs, bacteria, and viruses in teenagers is to cleanse their hands with soap. According to (Handayani, 2022) hand washing is a highly effective intervention for minimizing the occurrence of infectious diseases. (Our'ana et al., 2022) also stated that washing hands with soap has been scientifically proven to be effective in killing bacteria and preventing the spread of infectious diseases such as the flu, Upper Respiratory Tract Diseases (ARI), and eliminating disease-causing germs or bacteria on the hands. A study conducted by (Adriani, 2022) has demonstrated that adhering to appropriate hand-washing practices is highly successful in eliminating dirt and dust from the skin's surface. Furthermore, it can significantly decrease the presence of disease-causing microbes, including viruses, bacteria, germs, and parasites, on the skin, nails, and fingers. Digits on the hand (Ayatullah, 2023) statement supports the notion that washing hands with water and cleanser is more effective in removing dirt and mechanically cleaning the skin's surface, thereby significantly reducing the presence of disease-causing microorganisms such as viruses, bacteria, and other parasites on both hands.

This review had some limitations. It is conceivable that there may have been additional research in progress but not yet published, which could explain their omission from the review. Furthermore, the studies that were examined were limited to the use of the term "teenager" (which is synonymous with adolescent and youth), as defined by the World Health Organization "adolescents" are individuals aged 10-19 years, while "youth" refers to those aged 15-24 years. However, some of the research conducted focused on students in various stages of education (elementary, middle, and high school), which encompass a broader age range.

CONCLUSIONS

Hand sanitizer is a practical sanitizer that can be carried and used in all conditions to clean teenagers' hands. However, its use is only as effective as washing hands with soap. There are still remnants of germs, bacteria, and viruses that stick to the hands because the hand sanitizer is unable to clean the deepest seams of the skin. Apart from that, long-term use also makes the skin dry and irritated because hand sanitizer contains quite a lot of alcohol. For this reason, teenagers are expected to prioritize washing their hands with soap and running water rather than using hand sanitizer.

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