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## Student Organizations on Safe and Healthy Behavior: Behavior-Based Safety Approach

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### Abstract

**Introduction:** The safe and healthy behaviour among students is still low because external factors, such as access to information, figures, support from close people, and organizational participation, influence their adoptive tendencies.

**Case Presentation:** smoking behaviour, driving with a cell phone, not obeying traffic regulations, not wearing personal protective equipment, and parking vehicles in the wrong parking area.

**Conclusion:** Student organizations act as antecedents to their behaviour due to the surrounding promotional factors. Educational institutions and student organizations have a close relationship in creating their behaviour.

**Keywords:** antecedent; access to information; student organizations, safe behavior, healthy behavior

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### Introduction

Safe and healthy behaviour is still low among students, with unsafe behaviour associated with a risk of accident or injury, while unhealthy behaviour leads to illness after exposure. Behaviour is associated with attitudes and motivation to carry out an activity. The term safe and healthy behaviour is generally used in the world of work and needs to be applied by all society groups at home, office, school, campus, public places, and while driving. Safe behaviour is human behaviour that is carried out to prevent injuries in the workplace or its environment to minimize injuries [1]. A person's activities reduce the possibility of incidents or accidents [2].

The principal risks of unsafe behaviour are accidents, injuries and exposure to disease. Previous research explained that were 1,285 accidents recorded among students at JGU, the largest university in Rhineland-Palatine, Germany. It was reported that 71.8% were accidents on campus, and 28.2% were accidents on the way [3]. Another

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study reported that 35% of nursing students experienced needle stick injuries, which could result in the risk of exposure to the virus and potentially transmitting the virus to their families [4]. These injuries not only affect students' physical health but can also interfere with their learning process. Previous research states that unsafe behaviour includes the inability to use personal protective equipment when driving, not using the sidewalk, and the inability to cross at crossing signs [3]. Safe driving behaviour is related to the risk of accidents. Safe behaviour is a form of safe and comfortable driving for oneself and others, including complete personal protective equipment, complete vehicle facilities, and using the left lane [4]. Meanwhile, unhealthy behaviour includes smoking on campus, 2.3%, self-medication, free sex among students 6.2%, and the use of narcotics and illegal drugs 28% [5], [6], [7], [8].

Addressing safe behaviour in the academic environment is a must that focuses on individual safety and contributes to forming a culture of accountability among students and staff. A culture of accountability is the attitude and behaviour of individuals, and they are responsible not only for their actions but also for the actions of others in the academic community. Safe behaviour that is consistently applied can prevent accidents and incidents that can endanger individuals or groups. This creates a safer environment for all members of the academic community.

One example of a successful intervention in reducing unsafe behaviour is the healthy campus program implemented in several universities. The Healthy Campus program has been implemented on several campuses in Indonesia. In October 2019, the Ministry of Health socialized the healthy campus program in Indonesia, which was implemented at the University of Indonesia, Gadjah Mada University, Andalas University, Sebelas Maret University Solo, Hasanuddin University and Muhammadiyah University of Yogyakarta [11]. This program aims to improve healthy and safe living behaviour among students, lecturers, and academics.

The healthy campus program at Universitas Gadjah Mada implements a smoke-free campus policy. The implementation of a smoke-free campus reduces the percentage of smoking behaviour from 4.8% to 3.2% (over 3 years) [12], in contrast to the healthy campus program at Semarang State University, which implements an integrated coaching post-program to prevent non-communicable diseases among academicians. The implementation of this activity is a health screening once a month and coordination with health facilities at the community health centre. However, this activity has not been evaluated [13].

Previous research explains that the Healthy Campus Program encourages universities to involve health in university culture, processes and policies to achieve the health of the entire campus community [14]. The involvement of the WHO in health promotion is highly significant, particularly through the Healthy Campus initiative, which is based on health promotion principles. Through this approach, the WHO provides guidelines and encourages the integration of health aspects as part of the culture, processes, and policies within higher education institutions. This integration has a direct impact on the campus environment and influences student behaviour, including initiatives such as smoke-free campus policies and safe driving practices. Health promotion is an integral part of everyday life at universities, including developing health-supportive policies, providing facilities that support healthy lifestyles, and promoting health behaviours among students, staff, and faculty [15].

As institutions of higher education, Campuses function not only as places to deliver knowledge but also as places to develop students' character and soft skills. Student organizations play an important role as catalysts for leadership development, cooperation, and social activism. Research that discusses student organization involvement is generally related to character building, leadership and skills. Still, no research has examined student involvement in student organizations with safe and healthy behaviour. This provides an opportunity for research on whether involvement in organizations influences safe and healthy behaviour among students.

## Case Presentation

### *Background*

Motorbikes are the largest means of transportation used by students on campuses. Hence, they increasingly tend to affect the environment [16]. A 6-year research study carried out from 2012 to 2018 showed that the number of accidents in students was 1,285. Among them, injuries due to needles, such as not using gloves, carelessness, and inattentiveness in the medical and health faculty laboratories, were 71.8%, while those due to using computers were 28.2% [3]. Furthermore, accidents due to unsafe behaviour were found in 1,291 students in four states, with 762 associated with using cell phones while driving [17]. Unsafe behaviour among students has the potential to lead to physical accidents and implications for their academic performance. Therefore, it is important to implement effective safety education programs and create an environment that supports safe behaviour on campus.

### *Research Problem*

Student organizations play a significant role in building their insights and skills. It also acts as a forum for them to

develop their leadership, insight, personality, and communication abilities needed in social life [18]. Student involvement in organizations has a positive tendency towards self-development, such as self-confidence, leadership, feelings, and care [19]. On the other hand, student organizations also have a negative impact, as shown by a survey at the State Islamic University of North Sumatra, Medan. According to the survey, student involvement in the organization increases the number of college absences, leads to low academic achievement, late payment of tuition fees, smoking behaviour, sleeping late at night, not obeying vehicle regulations, not wearing personal protective equipment, driving at high speed, driving while using a cellphone, and parking outside the parking area.

### Objectives

Research objectives are to determine the characteristics that affect safe and healthy behaviour, provide access to information, prove student organizations as antecedents to their safe and healthy behaviour, and analyze their access to information.

## Research Methodology

### Research design

This research is a quantitative, cross-sectional study conducted at the State Islamic University of North Sumatra, Campus II, within the Faculty of Public Health. The Faculty comprises six departments: Nutrition, Occupational Health and Safety, Health Policy Administration, Environmental Health, Health Promotion and Behavioral Sciences, and Epidemiology. The study was conducted from August to December 2022, utilizing data obtained from 173 students enrolled in the Department of Occupational Safety and Health. The sample was selected using a total sampling technique, focusing on students studying occupational safety and health courses in semesters 5 and 7. The consideration of selecting 5th and 7th-semester students during the research made it easier to obtain samples.

### Research instrument

Data were collected using a closed questionnaire consisting of 4 variables. In variable X1, the respondent characteristics consist of 4 indicators: age, gender, educational background, and ethnicity. Meanwhile, the X2 variable consists of 2 indicators: organizational participation and. Furthermore, it consists of a Y1 variable with access to information comprising 2 indicators, namely information sources and frequency of access to information. Variable Y2 of safe and healthy behaviour consists of 2 indicators: the application of safe driving and healthy behaviours. The instruments used for data collection were first tested for validity and reliability on 30 students of the Faculty of Science and Technology at the State Islamic University, North Sumatra.

### Data Analysis

Variable construct data were analyzed using path analysis with the help of *Smart PLS (Partial Least Square)* version 3.0, which has a small sample size of 30 - 100. Path analysis is used because it involves latent variables and their indicators, and covariance-based analysis does not require data normality so that exploration of interactions between variables can be known. On the other hand, the minimum sample adequacy meets the provisions of the rule of thumb, namely the number of indicators multiplied by 10-20 samples. So, the minimum number of indicators is  $10 \times 15 \text{ samples} = 150 \text{ research samples}$ . Furthermore, the model can predict relationships through the  $R^2$  value, with the approaches used to develop theories for predictive purposes in previous studies [20]. It is also used to evaluate the measurement model for latency and its indicators [21]. Some of the results of the path analysis displayed are in the form of a measurement model (*outer model*), structural model (*inner model*), relationship strength ( $r$ -square), and hypothesis testing (statistical  $t$ -test). Hypothesis testing is determined based on  $p$ -value  $< 0.05$  or  $T \text{ statistic} > 1.96$ . The descriptive analysis of the respondents' characteristics includes gender, educational background, and student organizations' participation, as shown in Table 1.

**Table 1. Descriptive analysis (n = 173)**

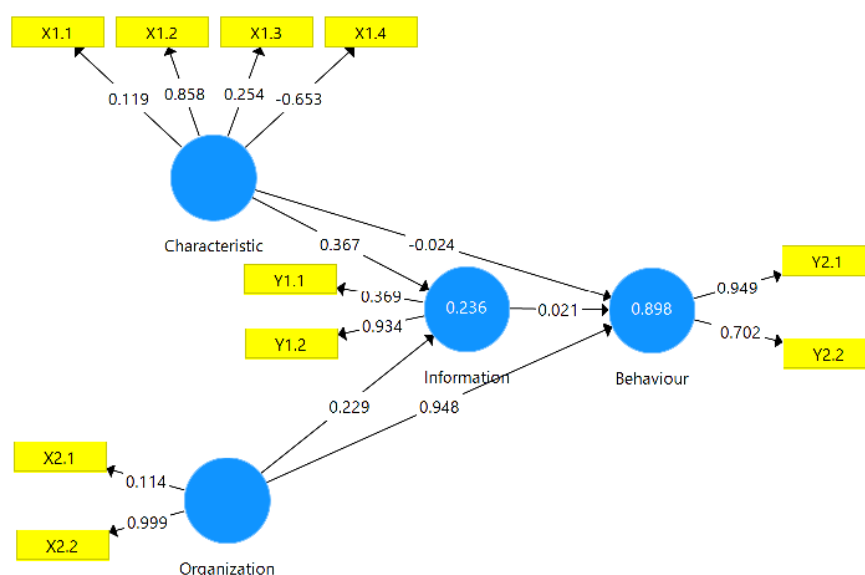
| Characteristics               | Frequency | Percentage |
|-------------------------------|-----------|------------|
| <b>Gender</b>                 |           |            |
| Male                          | 65        | 37,5       |
| Female                        | 108       | 62,5       |
| <b>Educational background</b> |           |            |
| Senior high school/equal      | 99        | 57,2       |

|                                     |     |      |
|-------------------------------------|-----|------|
| Vocational high school              | 51  | 29,5 |
| Islamic boarding school             | 23  | 13,3 |
| <b>Organizational participation</b> |     |      |
| Active                              | 128 | 74,0 |
| Not Active                          | 45  | 26,0 |

The highest number of respondents based on gender, education qualification, and active organization were 108 female (62.5%), 99 in high school (57.2%), and 128 respondents (74%), respectively.

### Path Analysis

The indicators of each variable can be simultaneously determined by analyzing the path of the relationship. The advantages of PLS analysis, besides being able to be used on small samples, can be used to determine t valid indicators in measuring variables (exogenous) and their individual relationship (endogenous) [22]. The results of the variable analysis with the indicator (outer model) and the latent variable relationship path (inner model) are shown in Figure 1.



**Figure 1. Analysis of Exogenous and Endogenous Research Variables**

The study consisted of 4 variables, namely respondent characteristics, student organizations, access to information, and behavior. The construction of the modeling path diagram in Figure 1 shows the path of the relationship between latent variables and their indicators as well as the relationship between variable constructs through the *inner model*. Respondent characteristic variable construct  $X1.2 = 0.858$ , student organizations produce indicator value  $X2.2 = 0.999$ , and access to information yields indicator value  $Y1.2 = 0.934$ . The behavior consisting of 2 indicators obtained a value above 0.5, namely  $Y2.1 = 0.949$  and  $Y2.2 = 0.702$ .

The validity in the *partial least square* analysis is convergent, which shows the indicators represent latent variables. This value is based on the *construct reliability* and *mean validity* of variance (AVE) above 0.5. The information, organizational, and characteristics variables have AVE values of 0.504, 0.506, and 0.697, respectively. However, the characteristic variable has an AVE value of 0.311, which means that it is not convergent and valid. Some indicators of characteristic variables do not represent characteristic variables such as age (X1.1), background (X1.2), and ethnicity (X1.3) with values of 0.119, 0.254, and -0.654.

### Hypothesis testing

The research hypothesis was accepted in the PLS analysis based on t-statistics after analyzing the measurement and structural model stages. Out of the 5 established hypotheses, 3 are significant, as shown in table 2.

**Table 2. Hypothesis testing**

| Variable                                           | Original sample | Sample mean | Standard deviation | T-statistic | p-value |
|----------------------------------------------------|-----------------|-------------|--------------------|-------------|---------|
| Respondent characteristics → behavior              | 0.155           | 0.155       | 0.053              | 2.941       | 0.003*  |
| Respondent characteristics → access to information | 0.117           | 0.121       | 0.059              | 1.970       | 0.049*  |
| Access to information → safe and healthy behavior  | 0.021           | 0.006       | 0.071              | 0.300       | 0.765   |
| Student organizations → access to information      | - 0.229         | - 0.300     | 0.215              | 1.068       | 0.286   |
| Student organizations → safe and healthy behavior  | 0.948           | 0.936       | 0.049              | 19.359      | 0.000*  |

Table 2 shows that the variables that affect the t-statistical analysis > 1.96 or p-value < 0.05 are in 3 hypotheses, namely respondent characteristics have a significant effect on behaviour (t-statistic 2.941), respondent characteristics have a significant effect on access to information (t-statistic 1.97), and student organizations have a significant effect on safe and healthy behaviour (t-statistic 19.359). Based on the t-statistic value of the three influencing hypotheses, the highest value is student organization towards behaviour. There are 2 insignificant hypotheses, namely, student organizations do not affect access to information (t-statistic 1.068), and access to information does not affect safe and healthy behaviour. Determination of the value of the influencing variable. The amount of influence is determined based on the r-square value shown in Table 3.

**Table 3. R - Square Value**

| Variable    | R Square |
|-------------|----------|
| Information | 0.236    |
| Behavior    | 0.899    |

The value of *r-square* in Table 3 indicates the strength of the influence path, as good, moderate, or weak. The proportion of student organizations that are very good at explaining behaviour is 0.898 or 89.8%, with a relationship strength parameter of 0.89, indicating that it influences students' behaviour. The contribution of the safe behaviour variable studied is 89% influenced by the research variables, namely characteristics, student organizations, and access to information. Information statistically has an effect of 0.236, while the percentage of characteristics weakens access to information by 23.6%. Furthermore, the Q-square can be calculated to determine the *goodness of fit* as follows:

The calculation of the value of r-square is as follows:

$$\begin{aligned}
 \text{Q-square} &= 1 - [(1 - R^2_1) \times (1 - R^2_2)] \\
 &= 1 - [(1 - 0.898) \times (1 - 0.236)] \\
 &= 1 - 0.077928 \\
 &= 0.9220
 \end{aligned}$$

The magnitude of the Q-Square value of 0.9220 shows that the research model of 92.92% has a diversity of data, which is properly explained by organizations. This tends to affect the safe and healthy behaviour of students, while the remaining 7.8% is explained by other variables outside the research; therefore, the research model has a *goodness of fit*.

## Discussion

The majority of respondents are women in occupational safety and health from eight faculties at the State Islamic University of North Sumatra. Previous studies in the library science program consisted of 217 students, with 174 women (80%) and 43 men (20%) [23]. The majority of medical study program students were 65% female and 35% male [24]. The no-smoking area policy in health high schools is implemented because students are dominated by women [25]. The three studies conducted on student groups found that women dominated the sample. Therefore, they generally provided a higher ratio than men. Research shows that women have higher safety attributes as measured by indicators, level of compliance with safety protocols, frequency of incidents, and their perceptions.

The majority of respondents have a Senior High School education background, compared to *pesantren* (Islamic School) or Vocational education. In Indonesia, the formal education level based on Law Number 20 of 2003 is divided into primary, secondary, and tertiary. Secondary education consists of general, vocational, religious, official, and special education [26]. Several Vocational High Schools study the field of occupational health safety science as well as the implementation of safe and healthy behaviour when practising in laboratory workshops such as the application of OHS (Occupational Health and Safety), personal hygiene in students, use of practical tools and cleanliness of the workshop environment [27].

However, occupational health safety lessons are not taught in Senior High Schools. Respondents have an active role in the organization, providing positive and satisfactory learning experience goals. This increases interpersonal skills, improves relationships for work opportunities, fosters the value of mutual cooperation, and fosters leadership behaviour in decision-making. Students' involvement in organizations provides a means of interaction with their peers with the same interests, talents, character, and principles. They tend to determine social identity and influence social behaviour easily. The World Health Organization stated that peers have a positive relationship with identity development, social relations, self-esteem, and adolescent independence. They further stated that social factors determine healthy behaviour in adolescent and adult groups, as well as high smoking behaviour due to peer support [28]. Students involved in organizations have self-confidence, assess themselves higher than others, and possess good managerial behaviour.

The characteristics used as variable indicators are age, gender, educational background, and ethnicity. Hypothesis testing proves that these characteristics have an effect on access to information because students are a group of young adults of developmental age with high curiosity. Cognitive development at this age requires groups of young adults to explore various things, and the easiest way to get information is via the Internet. Therefore, this research provides a significant relationship between characteristics and access to information. The ease of information accessible via the internet causes youth and young adults to be more interested in cyberspace. Therefore, physical activities such as sports tend to be low. The characteristics of students, gender, and age while riding a motorcycle affect vehicle safety behaviour for the first time. The effect of gender characteristics on safe behaviour also shows that women use higher safety attributes than men. Gender demographic characteristics have a relationship with safe behaviour and avoidance of sun exposure.

Student organizations influence behaviour because the provisions of the R<sup>2</sup> value for the relationship between endogenous variables above 0.7, 0.67, 0.33, and 0.19 are very strong, substantial, moderate, and very weak. The R<sup>2</sup> score of 89% indicates that student organizations make a very strong contribution to behaviour. This is in accordance with previous research, which stated that student organizations play a significant role in student behaviour, and educational institutions and student organizations have a close relationship in shaping student behaviour [29]. This is because students have different views of the organization on campus, and their interest in organizations with study activities varies based on benefits, positive and negative impacts and needs [18]. Victor and Kosasih supported the research results by stating that the number of active students in organizations was 74% at the State Islamic University of North Sumatra, and their general rule of motivation was their involvement in the organization due to their similar thoughts.

## Conclusions and Implications

In conclusion, student characteristics significantly affect their access to information. Young adulthood is an exploratory cognitive development phase due to the use of the internet to get information, which does not affect their safe and healthy behaviour.

Student organizations, as an antecedent of their behaviour, mean that any factor surrounding them promotes behaviour. It enables students to convey their potential, interests, talents, and a common vision with their peers. This tends to significantly influence their development and form self-identity, with higher self-assessment than those in other organizations. Furthermore, students active in organizations have higher self-confidence and better managerial attitudes.

Behaviour-based safety acts as an approach to analyzing unsafe behaviour against risk. The campus, as a formal learning and organizational development centre, can be used to socialize safe and healthy behaviour through student organizations. In addition, an approach is needed to provide the right interventions for students in the campus environment.

### *Impact*

Student organizations have significant potential to influence students' safe and healthy behaviours. Through active participation in these organizations, students can increase their knowledge of health practices, reducing the risk of dangerous behaviours. Student organisations serve as a platform that supports the dissemination of relevant health information and facilitates discussions that can form a collective awareness of the importance of public health. Thus, the results of this study can be used as a basis for developing more strategic intervention programs in the context of public health, especially in the campus environment.

Student organizations also play a role in creating networks that expand students' access to available health resources and services. In this context, students in organisations obtain helpful information and build social relationships supporting their mental and physical health. Involvement in these organizations can improve students' social and leadership skills, which are essential factors in self-development and community strengthening. Therefore, this study provides a valuable contribution to understanding how student organizations can be utilized to improve public health and students' overall well-being.

## **Suggestions for Future Research**

Future studies are recommended to expand the analysis by exploring the activities conducted within student organizations that enhance students' knowledge and health practices. Further research could also consider examining the differential impacts of student organizations based on the types of activities, organizational structure, or demographic characteristics of their members, such as age, gender, or educational background. In addition, subsequent research could focus on developing student organization-based interventions to promote healthy behaviours systematically. This approach may include specialized training for organizational leaders to act as agents of change in disseminating the importance of health and safety within the student community. By broadening the scope and approach of research, the findings are expected to support the development of more targeted and effective educational policies to foster a campus environment that holistically promotes the health and well-being of students.

## **Declarations**

### **Author Contributions**

Conceptualization, Utami, TN and Sillegu, S.; methodology, Utami, TN, Sayekti, R and Nuraini.; software, Utami, TN.; validation, Sayekti, R and Utami, TN.; investigation, Sayekti, R, Usiono, and Agustina, D.; resources, Agustina, D.; writing—original draft preparation, Sillegu, S.; writing—review and editing, Utami, TN. And Sayekti, R.; All authors have read and agreed to the published version of the manuscript.

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Data is available to author 1 to maintain respondent confidentiality.

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### **Institutional Review Board Statement**

This research has received permission from the research ethics committee of the College of Health Sciences "Maluku Husada" number: RK/054/KEPK/STIK/VIII/2022.

## Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

## Conflicts of Interest

There is no conflict of interest between the authors.

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