

ANALYSIS OF FACTORS ASSOCIATED WITH STUDENT PARTICIPATION IN THE FREE HEALTH CHECK PROGRAM AT SENIOR HIGH SCHOOLS IN BARANTI DISTRICT SIDENRENG RAPPANG REGENCY

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ABSTRACT

The Free Health Check Program (CKG) is a school-based preventive health initiative intended to support early detection and strengthen adolescents' health awareness. Participation, however, was incomplete at two senior high schools in Baranti District. This study analyzed the associations of knowledge, attitude, teacher support, implementation timing, and program implementation with student participation. An observational analytic study with a cross-sectional design was conducted among 83 students selected through stratified random sampling from SMAN 10 Sidenreng Rappang and MAN Sidenreng Rappang. Data were collected using a structured questionnaire that had demonstrated validity and reliability and were analyzed using the Chi-square test at $\alpha = 0.05$. Of the respondents, 47 (56.6%) participated in the program. Knowledge ($p < 0.001$), teacher support ($p = 0.041$), implementation timing ($p = 0.005$), and program implementation ($p = 0.001$) were significantly associated with participation, whereas attitude was not ($p = 0.398$). These findings indicate that participation is associated with cognitive, reinforcing, and enabling factors. Schools and health services should strengthen pre-program health education, actively involve teachers, schedule activities to avoid academic conflicts, and improve service organization. Because the design was cross-sectional, the results indicate associations rather than causal relationships.

Keywords: *Free health check, student participation, knowledge, teacher support, program implementation.*

INTRODUCTION

Adolescence is a critical stage of human development in which biological maturation, identity formation, expanding social roles, and increasing independence occur simultaneously. Health behaviors established during this period may continue into adulthood and influence later risks of noncommunicable disease, mental-health problems, educational disruption, and reduced social participation. For this reason, adolescent health is not limited to the absence of disease; it also includes the capacity to learn, participate, make informed decisions, and access appropriate care. Global evidence shows that investment in adolescent health produces benefits across the life course and contributes to educational and social outcomes (Patton et al., 2016; Sawyer et al., 2012; Viner et al., 2012). Schools are particularly important because they reach adolescents routinely, provide an organized environment, and connect students with teachers, peers, families, and public services. The Health-Promoting Schools approach therefore positions health

as part of the school system rather than as an occasional external activity. It emphasizes supportive environments, coordinated services, student engagement, and shared responsibility among education and health stakeholders (World Health Organization, 1986, 1997; World Health Organization & UNESCO, 2021).

Within this framework, school health services can support health education, early identification of problems, referral, and follow-up care. The World Health Organization defines school health services as services delivered to students enrolled in primary or secondary education, with the potential to address physical, mental, and developmental needs (World Health Organization, 2021). In Indonesia, various school- and community-based initiatives have used nutritional assessment, health counseling, physical-fitness promotion, and basic screening to increase awareness and identify health concerns (Anggraini et al., 2023; Burhanuddin et al., 2024; Faqih et al., 2023). Such activities are relevant because conditions including anemia, nutritional imbalance, visual problems, oral-health concerns, and low health literacy may remain unnoticed until they affect attendance or learning. Adolescent health promotion also needs to address psychological well-being and the ability to understand health information, because knowledge of risks, services, and follow-up options can influence how students respond to preventive programs (Astriningrum, 2024; Duana et al., 2023). The Free Health Check Program (CKG) represents a school-based opportunity to combine screening with health education and referral, but its potential benefits depend on the participation of eligible students.

Participation is not a single personal decision; it is the result of interaction between individual readiness and the environment in which the program is delivered. The PRECEDE-PROCEED Model provides a useful framework for explaining this interaction (Green & Kreuter, 2005). Predisposing factors include knowledge, beliefs, perceptions, and attitudes that shape motivation before behavior occurs. Enabling factors include time, access, facilities, procedures, personnel, and organizational arrangements that make behavior possible or difficult. Reinforcing factors include encouragement, approval, reminders, and social support that strengthen or weaken action after motivation has developed. In the present study, knowledge and attitude were treated as predisposing factors because they reflect students' understanding and evaluation of the CKG program. Implementation timing and program implementation were treated as enabling factors because they determine whether students can access the service without avoidable academic or logistical barriers. Teacher support was treated as a reinforcing factor because teachers can explain expectations, provide reminders, organize student movement, and normalize participation. The model suggests that positive knowledge or attitude may be insufficient when scheduling is unsuitable, procedures are unclear, or support is weak. Conversely, an organized and supportive environment may facilitate participation even among students who initially have limited knowledge.

The Indonesian Ministry of Health expanded the school-based Free Health Check Program and reported a national target of 53 million students across 282,317 educational units in 2025 (Kementerian Kesehatan RI, 2025). This scale reflects a policy commitment to preventive services and early detection among school-age populations. However, the

existence of a national program and the availability of a school visit do not automatically ensure complete uptake. Coverage may differ among schools because information is delivered through different channels, teachers have varying levels of involvement, schedules may conflict with lessons or examinations, and service capacity may not match the number of students. Students may also have concerns about privacy, pain, stigma, missing class, or uncertainty about what will happen during the examination. These barriers are important because incomplete participation reduces the representativeness of screening results and may exclude students who could benefit from early identification. Existing studies have examined adolescent health literacy and health behavior (Prihanto et al., 2021; Putri & Mujiyono, 2022), school health screening (Natalia & Anggraeni, 2022), teacher involvement (Naing et al., 2022), and student engagement in school health promotion (Kontak et al., 2025). Nevertheless, evidence remains limited on how knowledge, attitude, teacher support, scheduling, and implementation quality operate together in relation to participation in a specific school-based Free Health Check Program.

Teachers may be particularly influential in this context because they are the closest formal adult actors to students during the school day. They can communicate the purpose of the program, clarify that participation is supported by the school, coordinate attendance by class, identify absent students, and help students who feel anxious or uncertain. Evidence from Health-Promoting School programs identifies teacher involvement and organizational support as important components of implementation (Kontak et al., 2025; Naing et al., 2022). Scheduling is equally important. A program conducted during examinations, compulsory lessons, ceremonies, religious activities, or major extracurricular events may compete with students' other responsibilities. Implementation quality also matters: long waiting times, unclear registration, insufficient privacy, poor communication, limited equipment, or inadequate staff can discourage participation and create negative experiences. These operational factors are modifiable. Unlike fixed demographic characteristics, schools and health providers can improve communication plans, assign teacher roles, select appropriate dates, organize service flow, and evaluate reasons for non-participation. Examining these factors can therefore produce recommendations that are immediately relevant to program management.

Preliminary program records from the two study sites indicated that participation was incomplete. At MAN Sidenreng Rappang, 32.8% of 375 students did not participate in the 2025 CKG activity. At SMAN 10 Sidenreng Rappang, 38.1% of 113 students did not participate. Although the proportions differ, both schools showed a meaningful gap between program availability and student uptake. The gap cannot be explained solely by the presence or absence of a positive attitude because participation occurs within a structured school environment. Local analysis was therefore needed to determine whether cognitive, social, and operational factors were associated with the observed participation pattern.

Accordingly, this study aimed to analyze the associations of knowledge, attitude, teacher support, implementation timing, and program implementation with student participation in the Free Health Check Program at senior high schools in Baranti District,

Sidenreng Rappang Regency. The study addressed five questions: whether participation differed according to knowledge, attitude, teacher support, implementation timing, and program implementation. Based on the PRECEDE-PROCEED framework, the study expected that stronger predisposing, reinforcing, and enabling conditions would be associated with participation, while recognizing that each variable was tested separately and that the cross-sectional design could not establish causality. The study contributes a local, integrated assessment of factors that schools and health providers can modify before and during implementation. Its practical contribution is the identification of priority areas for communication, teacher coordination, scheduling, service organization, and follow-up.

The focus on two senior high schools also adds contextual value because adolescent participation may differ from participation among younger students or community populations. Senior high school students have greater autonomy, denser academic schedules, and more complex perceptions of privacy and social judgment. At the same time, school routines and teacher authority continue to shape access to services. Understanding this balance between individual agency and institutional organization is necessary for designing a program that is acceptable, efficient, and inclusive. The findings are intended to support school-level decision making rather than to claim universal determinants of participation across all Indonesian schools.

RESEARCH METHOD

This study used a quantitative observational analytic design with a cross-sectional approach. Cross-sectional studies measure exposure and outcome variables within the same period and are appropriate for estimating distributions and testing statistical associations when the objective is not to evaluate an intervention over time (Setia, 2016). The design was selected because the study sought to identify factors associated with participation in a program that had already been implemented, rather than to assign students to an intervention or establish temporal causation. Data collection was conducted at SMAN 10 Sidenreng Rappang and MAN Sidenreng Rappang, two senior high schools in Baranti District, Sidenreng Rappang Regency. Both schools were included because they participated in the CKG program and maintained records that could support the identification of the target population and participation status. The conceptual framework was the PRECEDE-PROCEED Model (Green & Kreuter, 2005). Knowledge and attitude represented predisposing factors; implementation timing and program implementation represented enabling factors; and teacher support represented a reinforcing factor. The dependent variable was student participation in the CKG activity. The unit of analysis was the individual student. The natural school setting was retained so that responses reflected students' actual experience of communication, scheduling, support, and service organization.

The study population comprised 488 active students who were targets of the CKG program: 375 students from MAN Sidenreng Rappang and 113 students from SMAN 10 Sidenreng Rappang. The sample size was calculated using the Slovin formula with a 10%

margin of error. The calculation produced 82.99, which was rounded to 83 respondents. The sample was selected using stratified random sampling, with each school treated as a separate stratum. The achieved allocation was disproportionate to the size of the two school populations: 46 respondents were selected from MAN Sidenreng Rappang and 37 from SMAN 10 Sidenreng Rappang. This allocation was used to ensure adequate representation from both schools for descriptive comparison, but it means that the pooled sample distribution does not reproduce the original population proportions. Within each stratum, eligible students were selected randomly from the available student list. Inclusion criteria were active enrollment at one of the study schools, inclusion in the target population for the CKG program, willingness to participate in the research, and the ability to complete the questionnaire. Students were excluded when they were absent during data collection, ill or otherwise unable to complete the instrument, unwilling to participate, or returned substantially incomplete responses. The final analytic sample consisted of all 83 respondents with complete data.

Primary data were collected using a structured questionnaire developed around the study variables. Before administration, respondents received a standardized explanation of the study purpose, voluntary nature of participation, confidentiality, and technical instructions for completing the instrument. Knowledge items assessed understanding of the objectives, benefits, preventive value, and expected procedures of the CKG program. Attitude items assessed acceptance of school health checks, perceived usefulness, comfort, and willingness to engage with the activity. Teacher-support items assessed whether teachers provided information, reminders, encouragement, supervision, assistance, and coordination. Implementation-timing items assessed whether the schedule was announced clearly, considered convenient, and avoided conflicts with classroom learning, examinations, ceremonies, or important school activities. Program-implementation items assessed information delivery, registration, clarity of procedures, readiness of facilities and equipment, orderliness of student flow, privacy, and communication by officers and school staff. Participation status was recorded as participation or non-participation in the CKG activity. Secondary information was obtained from school documents and program records to describe the population and local participation context. The questionnaire was piloted among 30 students outside the final study sample. Item validity was assessed using Pearson product-moment correlations. All 25 items exceeded the r -table value of 0.361 at $\alpha = 0.05$, with coefficients ranging from 0.412 to 0.785. Reliability was assessed using Cronbach's alpha. The overall coefficient was 0.874, while coefficients for the individual variable scales ranged from 0.792 to 0.901, indicating acceptable internal consistency. Questionnaire scores were categorized according to the scoring rules established for each variable so that the data could be analyzed as categorical measures.

Data management involved checking questionnaire completeness, coding responses, entering data, verifying the dataset, and tabulating categorical distributions. Univariate analysis described gender, age, grade level, school origin, participation status, and the distribution of study variables using frequencies and percentages. Bivariate

analysis used the Chi-square test to examine the association between each independent variable and participation status. The level of statistical significance was set at $\alpha = 0.05$. A p-value below 0.05 was interpreted as evidence that the distribution of participation differed across categories of the independent variable. A p-value above 0.05 indicated that the observed difference was not statistically significant within the sample. The analysis was intentionally described as bivariate because each factor was tested separately and no multivariable adjustment was conducted. Consequently, a significant result does not demonstrate that a factor is an independent predictor, and a non-significant result does not prove the absence of any practical influence. The cross-sectional design also prevents confirmation that the measured factor preceded participation. Ethical safeguards included permission from the participating schools, voluntary participation, explanation of the study purpose, protection of respondent confidentiality, and use of the data only for research and reporting. Results were reported in aggregate so that individual students could not be identified.

RESULTS AND DISCUSSION

Result

Respondent Characteristics

The study included 83 respondents from MAN Sidenreng Rappang and SMAN 10 Sidenreng Rappang. All questionnaires included in the analysis were complete for the variables examined. Respondent characteristics were summarized by gender, age, grade level, school origin, and participation status. These descriptive data provide context for interpreting the bivariate findings and show the composition of the sample drawn from the two school strata.

Most respondents were male (62.7%), while female respondents accounted for 37.3%. The largest age group was 17 years (34.9%), followed by 16 years (26.5%), 18 years (15.7%), 15 years (14.5%), 19 years (7.2%), and 12 years (1.2%). Thus, most participants were in middle-to-late adolescence, although the age range was broad. The demographic profile should be considered when interpreting the results because age, gender, and grade were not included as adjustment variables in the bivariate analysis.

By grade level, 41.0% of respondents were in Grade 12, 36.1% in Grade 11, and 22.9% in Grade 10. MAN Sidenreng Rappang contributed 55.4% of the sample and SMAN 10 Sidenreng Rappang contributed 44.6%. These sample proportions reflect the disproportionate allocation described in the methods and should not be interpreted as the population distribution of the two schools. Overall, 47 students (56.6%) participated in the CKG program, whereas 36 students (43.4%) did not participate. The non-participation proportion was sufficiently large to justify examining factors associated with uptake.

Table 1. Respondent Characteristics

Variable	Category	Frequency	%
Gender	Male	52	62.7
	Female	31	37.3
Age	12 years old	1	1.2

	15 years old	12	14.5
	16 years old	22	26.5
	17 years old	29	34.9
	18 years old	13	15.7
	19 years old	6	7.2
Grade	Grade 10	19	22.9
	Grade 11	30	36.1
	Grade 12	34	41.0
School Origin	MAN Sidenreng	46	55.4
	Rappang		
	SMAN 10 Sidenreng	37	44.6
Participation Status	Rappang		
	Participate	47	56.6
	Do Not Participate	36	43.4
Total		83	100.0

Table 1 shows that both schools and all three senior-high-school grade levels were represented. The distribution also indicates that participation was not universal even among students who were present in the study sample. Descriptive findings alone cannot identify why students did or did not participate, but they establish the outcome distribution used in the association tests. Because the study was not designed to estimate weighted population prevalence, the participation percentage describes the analytic sample rather than a population-adjusted rate for all 488 students.

Bivariate Analysis

Bivariate analysis was performed using the Chi-square test to evaluate the relationship between each categorical independent variable and participation status. Statistical significance was assessed at $\alpha = 0.05$. The tests were unadjusted; therefore, each p-value represents the association observed for one factor without controlling for demographic characteristics or the other study variables. The interpretation focuses on whether an association was detected, not on causal direction or effect magnitude.

A statistically significant result indicates that the observed distribution of participation was unlikely under the null hypothesis of no association. It does not show how large the association was because odds ratios, prevalence ratios, confidence intervals, and cross-tabulated cell counts were not reported in the available analysis. The results should therefore be used to identify priority variables for further evaluation rather than to rank determinants by strength.

Association Tests

As summarized in Table 2, knowledge, teacher support, implementation timing, and program implementation were significantly associated with student participation, whereas attitude was not. The results identify individual understanding and school-level reinforcing and enabling conditions as relevant areas for further interpretation. Because the tests were bivariate, the findings do not establish causal direction, independent prediction, or the magnitude of each association.

Table 2. Bivariate Associations with Student Participation

Variable	p-value	Interpretation
Knowledge → Student Participation	< 0.001	Significant
Attitude → Student Participation	0.398	Not significant
Teacher Support → Student Participation	0.041	Significant
Program Implementation Time → Student Participation	0.005	Significant
Program Implementation → Student Participation	0.001	Significant

Knowledge was significantly associated with participation in the CKG program ($p < 0.001$). This was the smallest p-value among the variables tested and indicates that participation status differed across the knowledge categories measured in the study. The result is compatible with the possibility that students who understand the purpose, benefits, and procedures of the program respond differently from students with limited information. However, because cross-tabulated counts and an effect estimate were not included, the analysis does not quantify the direction or size of the difference.

Attitude was not significantly associated with participation ($p = 0.398$). The observed distribution of participation across attitude categories did not reach the predefined significance threshold. This result does not establish that attitude has no relevance to health behavior; it indicates only that the study did not detect a statistically significant bivariate association between the measured attitude categories and actual participation in this sample.

Teacher support was significantly associated with participation ($p = 0.041$). The p-value was close to the 0.05 threshold, so the finding should be interpreted cautiously, particularly because multiple factors were tested and no adjusted model was used. Nevertheless, the association is operationally meaningful because teacher communication, reminders, and coordination can be modified directly by schools.

Implementation timing ($p = 0.005$) and program implementation ($p = 0.001$) were also significantly associated with participation. These findings indicate that participation differed according to students' perceptions of schedule suitability and the way the activity was organized. The pattern supports attention to enabling conditions such as advance notice, avoidance of academic conflicts, orderly service flow, privacy, facility readiness, and clear instructions.

Discussion

Knowledge

The significant association between knowledge and participation is consistent with evidence that health literacy and health knowledge are linked to preventive health behavior among Indonesian adolescents (Hasanatuludhhiyah et al., 2023; Prihanto et al., 2021; Putri & Mujiyono, 2022). Knowledge can influence participation through several mechanisms. Students who understand the aim of screening may perceive the activity as relevant rather than as an interruption to school routines. Clear knowledge of procedures

can reduce uncertainty about examinations, waiting time, privacy, and follow-up. Awareness of possible benefits can also increase the perceived value of early detection, particularly when health problems may affect concentration, attendance, or physical activity. School screening has been used to identify nutritional, sensory, hygiene, and oral-health concerns that may otherwise remain unrecognized (Natalia & Anggraeni, 2022). Local evidence on adolescent anemia also demonstrates the continuing need for school-based health information and preventive action (Anggraeni et al., 2025).

The practical implication is that socialization should be treated as an intervention component rather than as a brief announcement. Information should explain what the CKG program is, which examinations will be conducted, how long the process may take, what students need to prepare, how confidentiality will be protected, and what happens when a potential problem is identified. Messages should be delivered through several channels, including homeroom teachers, classroom briefings, counseling services, student groups, notice boards, and digital class communication. Repetition is important because a single announcement may not reach absent students or may be forgotten. Health workers and schools should also use language appropriate to adolescents and provide opportunities for questions. This approach can improve knowledge while simultaneously reducing fear and misinformation. Future evaluations should report the distribution of participation within each knowledge category and calculate an effect estimate so that the strength and practical importance of the association can be assessed.

Attitude

Attitude was not significantly associated with participation. Under the PRECEDE-PROCEED Model, attitude is a predisposing factor, but predisposition alone may not result in behavior when enabling and reinforcing conditions are weak (Green & Kreuter, 2005). A student may agree that health checks are useful but still be unable or unwilling to participate because of schedule conflicts, absence, embarrassment, concern about pain, fear of receiving an unfavorable result, uncertainty about privacy, or lack of clear teacher direction. In a school setting, participation is often collective and organized by adults, so individual preference operates within class schedules and institutional procedures. The result therefore suggests that favorable perceptions require practical support before they can be translated into action.

Several methodological explanations are also possible. Attitude may have been measured in broad categories that did not capture specific concerns about individual examination procedures. Responses may have been affected by social desirability because students could report that the program was important even when they felt hesitant. The sample size may also have limited statistical power to detect a modest association. For these reasons, the non-significant result should not be interpreted as evidence that attitudes can be ignored. Schools should still create a respectful and non-stigmatizing environment, explain privacy protections, permit questions, and respond to anxiety. Qualitative interviews or open-ended questionnaire items could help identify the exact beliefs and concerns that are hidden within an overall positive attitude score. Future

studies should distinguish perceived usefulness, perceived risk, fear, trust, privacy concerns, and intention to participate rather than combining all dimensions into a single category.

Teacher Support

Teacher support was significantly associated with participation, supporting the role of teachers as reinforcing agents in school health promotion. Teachers can explain the purpose of the activity, remind students of the date, coordinate movement by class, accompany students to the service location, identify those who are absent, and reassure students who feel uncertain. A mixed-methods study of Health-Promoting Schools likewise identified teachers as central actors in the promotion and implementation of school health activities (Naing et al., 2022). Teacher involvement also communicates that the program is legitimate, expected, and valued by the school. When teachers are passive or receive incomplete information, students may view the activity as optional, may not understand where to go, or may prioritize other school tasks.

The finding supports a structured teacher-engagement plan. Before implementation, health workers and school leaders should conduct a brief orientation that explains program objectives, student flow, teacher responsibilities, privacy procedures, and referral arrangements. Homeroom teachers can receive attendance lists and a standardized message to ensure that information is consistent across classes. During implementation, designated teachers can coordinate arrival times and prevent crowding without pressuring students or compromising voluntariness. After the activity, teachers and counseling staff can help follow up with absent students and communicate general program information to parents. Teacher support should be monitored using observable indicators such as whether announcements were delivered, reminders were issued, classes were accompanied, and non-participation was documented. These steps turn teacher support from an informal expectation into a measurable part of program quality.

Implementation Timing and Program Implementation

The significant associations of implementation timing and program implementation with participation highlight the importance of enabling conditions. Reviews of school health promotion show that student engagement is shaped by organizational structures, adult support, and the extent to which activities are integrated into school routines (Kontak et al., 2025; Langford et al., 2014). A program may be clinically appropriate but still achieve incomplete participation when the schedule competes with examinations, compulsory lessons, ceremonies, religious activities, or extracurricular commitments. Advance notice matters because students and teachers need time to prepare, obtain required permission, and adjust class activities. The schedule should also account for the number of students, available personnel, examination duration, and the capacity of the service location.

Program implementation encompasses more than the presence of health workers and equipment. Students' experience is influenced by registration clarity, waiting time,

privacy, cleanliness, communication, respectful treatment, and the visibility of follow-up arrangements. Long queues and crowded rooms can increase anxiety and cause students to return to class before being examined. Inadequate privacy may be especially important for adolescents. Schools and health centers should jointly prepare a written operational plan that includes class-based time slots, a service-flow map, staffing assignments, contingency procedures, and a communication protocol. A brief post-activity evaluation should compare the target list with attendance, document reasons for non-participation, and identify stages at which delays occurred. This information can guide changes to the next cycle. The significant findings for timing and implementation support the view that participation is partly an organizational outcome, not merely an individual choice.

Novelty and Practical Contribution

The novelty of this study is contextual and integrative. Previous studies have generally emphasized particular components, including adolescent health literacy and health behavior (Prihanto et al., 2021; Putri & Mujiyono, 2022), school health screening (Natalia & Anggraeni, 2022), teacher involvement (Naing et al., 2022), or student engagement and whole-school implementation (Kontak et al., 2025; Langford et al., 2014). In contrast, the present study examined knowledge, attitude, teacher support, implementation timing, and program implementation together within the PRECEDE-PROCEED categories of predisposing, reinforcing, and enabling factors (Green & Kreuter, 2005), and related each factor to actual participation in the school-based Free Health Check Program in Baranti District. The contribution is therefore a context-specific and integrated assessment of modifiable factors, rather than a claim that any single factor is entirely new or universally applicable.

The practical contribution lies in translating statistical associations into a sequence of manageable actions supported by school-health guidance. The WHO guideline on school health services and the global Health-Promoting Schools standards emphasize coordinated services, supportive environments, clear stakeholder roles, student engagement, and continuity of referral and follow-up (World Health Organization, 2021; World Health Organization & UNESCO, 2021). Evidence from the WHO Health-Promoting School framework also indicates that whole-school approaches require consistent implementation across policy, education, environment, and service components (Langford et al., 2014). Accordingly, before implementation, schools can assess student knowledge, prepare communication materials, brief teachers, select a date that avoids academic conflicts, and confirm facilities and personnel. During implementation, class-based scheduling, clear registration, privacy, and orderly flow can reduce barriers. After implementation, attendance reconciliation and documentation of reasons for non-participation can support targeted follow-up. The study does not establish that these actions will cause higher participation, but it identifies plausible and modifiable areas for improvement. A future implementation study could test a standardized package containing pre-program education, teacher briefing, optimized scheduling, and service-flow management and compare participation before and after the package is introduced.

Broader Implications and Limitations

Improving participation in school health screening has value beyond meeting a coverage target. Consistent uptake can strengthen health literacy, support early identification, improve referral, and provide schools and health offices with a clearer picture of common adolescent health needs. Whole-school approaches are more likely to succeed when health workers, school leaders, teachers, students, and families receive consistent information and understand their roles (World Health Organization & UNESCO, 2021). Local studies on adolescent knowledge and child health risks also support the importance of early preventive action and context-sensitive communication (Mardhatillah et al., 2021; Sulaiman et al., 2021). The CKG program can become more than a one-time screening event when it is linked to education, referral, follow-up, and repeated evaluation.

The study has several limitations. First, the cross-sectional design measured factors and participation within the same general period, so temporal order and causality cannot be established. Second, the sample was limited to two schools and used disproportionate allocation, reducing direct generalizability to the full student population or other districts. Third, knowledge, attitude, teacher support, timing, and implementation were measured through student reports and may be affected by recall or social-desirability bias. Fourth, the analysis was bivariate and did not control for age, gender, grade, school, absence, prior health experience, family support, peer influence, or other potential confounders. Fifth, the results table did not include cross-tabulated counts, confidence intervals, or effect estimates, limiting assessment of magnitude. These limitations require cautious interpretation. The findings should be viewed as evidence for program improvement and further study rather than as a definitive model of causal determinants.

A practical improvement cycle can be organized in four stages. The preparation stage should map the target population, identify schedule constraints, brief teachers, and deliver student information. The readiness stage should confirm staff, equipment, rooms, privacy, registration lists, and referral pathways. The implementation stage should monitor queue length, class flow, communication quality, and attendance in real time. The evaluation stage should compare eligible and participating students, document reasons for absence or refusal, communicate follow-up needs, and revise procedures for the next visit. Simple indicators—percentage receiving advance information, percentage of teachers briefed, average waiting time, participation by class, and documented follow-up—can make program quality visible. These steps align the study findings with a continuous-improvement approach while respecting that participation remains voluntary.

CONCLUSION

Knowledge, teacher support, implementation timing, and program implementation were significantly associated with student participation in the Free Health Check Program, whereas attitude was not. The findings support the PRECEDE-PROCEED perspective that participation is shaped by the interaction of predisposing, reinforcing, and enabling factors. Knowledge is relevant because students need to understand the

purpose, procedures, and benefits of screening. Teacher support matters because school-based participation is organized through communication, reminders, and class coordination. Timing and implementation matter because participation can be restricted when schedules conflict with academic responsibilities or when service procedures are unclear, inconvenient, or insufficiently private. Schools and health services should therefore prioritize structured pre-program education, clear teacher roles, schedules that avoid academic conflicts, adequate facilities and privacy, orderly service flow, and routine documentation of reasons for non-participation. The non-significant attitude result should not be used to disregard students' perceptions; rather, it indicates that favorable perceptions may require enabling and reinforcing support to become action. Because the study was cross-sectional, limited to two schools, based partly on self-report, and analyzed without multivariable adjustment, the results should be interpreted as local associations. Broader studies should report cross-tabulated effect estimates and test whether an integrated implementation package improves participation over time.

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