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Development of Audiovisual Media for Reproductive Health Education for Parents of Adolescents

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Abstract

Parents are the primary source of information for adolescents, but many parents lack an understanding of health materials. For knowledge to be increased, health media, one of which is audiovisual media, are desirable. This study aimed to develop audiovisual media on adolescents' reproductive health. Media development utilized the analyze, design, develop, implement, and evaluate (ADDIE) model. The respondents in this study were parents of adolescents aged 10–14 years, comprising 10 parents in the small group evaluation, 20 in the field evaluation, and 10 in the implementation stage. The effectiveness of the media was tested through pretests and posttests. Using a questionnaire tested for validity and reliability, the data were collected. The effectiveness of the media was analyzed using N-gain. The results revealed that the seven audiovisual media were suitable for use. At the implementation stage, the N-gain value was 0.55, indicating that the video effectively increased parents' knowledge of reproductive health. Developing audiovisual media on reproductive health is effective for parents. To ensure parents truly grasp reproductive health information, health institutions should consider creating interactive audiovisual resources. This format would make the material more accessible and comprehensible.

Keywords: adolescent, audiovisual, parents, reproductive health

Introduction

Globally, the problem of adolescent reproductive health remains a stark concern, which is demonstrated by one of the Sustainable Development Goals (Goal 5), that is, gender equality and empowerment of women and adolescents. In Indonesia, one in four women aged 20–24 years were married before they turned 18.[1] Marriage at a young age can occur because of a lack of knowledge among adolescents regarding reproductive health.[1] In Indonesia, adolescents have less knowledge when it comes to reproductive health, such as puberty (61% of females; 55% of males) and efforts to prevent the transmission of human immunodeficiency virus (HIV) (26% of females and 36% of males).[1]

There remain adolescents who do not know that they can get pregnant after one sexual intercourse. Their ignorance indicates that 2% of female adolescents and 8% of male adolescents have engaged in premarital sexual activities.[2] Survey results in Indonesia show that 28% of female adolescents had their first period at 13, and 27% of male adolescents had their first wet dream at 14.[2] The age of first sexual intercourse in male and female adolescents is mostly 17 years (19%). There are already 11-year-old male adolescents who have engaged in premarital sex.[2,3] Hence, reproductive health education must be provided to adolescents from an early age, such as before puberty.[4]

The impact of premarital sexual behavior on adolescents caused 3.88% of Indonesian adolescents aged 15–19 years to be infected with HIV in 2022 and increased to 5.53% for the same age group in 2023.[5] Another impact is that 16.4% of female adolescents in Indonesia aged 15–19 years experience unwanted pregnancies.[2] Meanwhile, in Central Java Province, HIV cases, with an age range of 15–19 years, were 6.84% in male adolescents and 2.86% in female ones.[6] Surakarta is the second-ranked city in Central Java Province with new People Living with HIV (PLHIV) cases (6.88%, 2023).[7] Pajang Primary Health Care in Surakarta reported 0.02% cases of unwanted pregnancies in 2021 and are expected

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to increase up to 0.416% by 2023.[8,9] In 2023, in primary health care (PHC), 0.083% of adolescents had premarital sex, and 0.166% of adolescents under 20 years gave birth.[9] Between January and September 2024, PHC accounted for the third-highest percentage (0.083%) of adolescents giving birth.[10]

The adolescent groups are categorized into three age ranges: early (10–14 years), middle (15–17 years), and late (18–19 years).[11] Early adolescents are a vulnerable age group and must be educated about the prevention of reproductive health problems, including premarital sexual behavior, unwanted pregnancy, and HIV/AIDS.[1] Prevention efforts must be carried out before 15–19 years because this age group has the fourth highest number of HIV cases after ages 25–49, 20–24, and ≥50 years.[5] Vulnerability in adolescents takes place because of a lack of knowledge about reproductive health.[1] Therefore, adolescents' knowledge about reproductive health should be increased.[1]

Parents are one source of reproductive health information for adolescents. In Indonesia, 53% of adolescents discuss reproductive health with their mothers, and some discuss it with their fathers (4% of females and 8% of males).[2] A study in Surabaya and Surakarta Cities, Indonesia, showed that reproductive health communication between parents and adolescents can increase adolescents' knowledge, attitudes, and intentions regarding reproductive health.[12,13] Parents have an essential role in preventing risky sexual behavior in adolescents, such as by providing reproductive health information to adolescents.[14] A study conducted in Bandung indicated that effective parental reproductive health education for adolescents is associated with a reduced risk of their engaging in risky sexual behavior.[15]

A study in Surakarta City found that a considerable number of parents (52.67%) have not provided reproductive health education, primarily because of a lack of knowledge.[14] A study in Nigeria implies that parents are to provide reproductive health education.[16] Another study in Surakarta City revealed that parents' limited knowledge of reproductive health prevented them from answering their adolescents' questions. Consequently, parents in this study primarily discussed menstruation, given their lack of information on other reproductive health topics.[17] Supposed reproductive health communication between parents and adolescents is rarely carried out, which can negatively impact the trust of adolescents in their parents. Adolescents may assume that their parents do not know about reproductive health, so they look for other sources of information that may not necessarily be true.[18]

Parents need media to increase their knowledge about adolescents' reproductive health. The current media available are in the form of modules intended to enhance adolescents' knowledge about reproductive health issued by the Indonesian Government. Out-of-school adolescents and school teachers are the target audience.[19] However, there remains a lack of media that can assist in increasing parents' knowledge of reproductive health. Pocketbooks are the existing educational media for adolescent reproductive health, accessible to parents, which are issued by NGOs dedicated to caring for adolescents and NGOs working to fulfill their sexual and reproductive health rights.[20]

To help parents understand reproductive health material, audiovisual media are essential. A study in the United States reported that parents consider videos as the appropriate form of media for providing reproductive health information.[21] Moreover, parents trust the information they acquire from health workers in PHC.[21] If reproductive health information is presented to parents through media featuring liked and trusted personalities, it could significantly enhance understanding. In such a scenario, parents would likely engage more deeply with the content, consequently enhancing their knowledge.[22]

Increased parental knowledge can enhance parents' confidence in providing reproductive health information to their adolescents, thereby facilitating effective communication about reproductive health between adolescents and their parents.[17] This communication helps enhance the knowledge of adolescents about reproductive health, enabling them to avoid premarital sexual behavior and other HIV-risk activities such as drug use or having multiple partners.[23] Moreover, reproductive health communication from parents can increase adolescent literacy on reproductive health.[24]

Reproductive health education media is essential for parents to enhance their knowledge of adolescent reproductive health and encourage them to provide this information to their adolescents.[25] A study in the Special Region of Yogyakarta Province supports the idea that education can increase mothers' knowledge about reproductive health.[22] Longitudinal research in Tanzania on adolescents who received reproductive health education has not been successful in improving attitudes and behaviors related to reproductive health; hence, parents must be involved in educating adolescents.[26] Other studies to increase parental knowledge remain rare; existing research typically uses applications and training.[27] Another study focused on providing information and motivation directly to adolescent guardians without using media.[28] Among the forms of media, film was the predominant method previously used to convey adolescent reproductive health

information to parents.[29] Some initiatives leverage the internet to provide mothers with interactive reproductive health content, increasing their knowledge.[22] This study aimed to develop audiovisual media that involves health workers in PHC and experts in the video. A systematic review found that videos have the potential to promote health.[30] The audiovisuals developed are packaged as video podcasts because, according to a study in East Java Province, podcasts are an innovative medium that can reach diverse target audiences.[31]

Method

This research and development study was conducted in the working area of Pajang PHC of Surakarta City, Central Java Province, Indonesia, from July to August 2024. The respondents of this study were parents of adolescents aged 10–14 years. Using the analyze, design, develop, implement, and evaluate (ADDIE) model, the development of audiovisual media in this study was conducted.

The analysis stage was conducted qualitatively over 1 week, including a focus group discussion (FGD) with 30 parents of adolescents in the working area of Pajang PHC. The instrument employed was the FGD guidelines developed by the authors, which served as a reference to explore parents' thoughts on adolescent reproductive health education, materials, preferred media, how to package the media, and who parents trust to provide them with adolescent reproductive health information.

The product design stage was conducted over 1 week, involving interviews with village midwives, PHC officers, parents of adolescents, health promoters, and media experts, using pre-established interview guidelines. At this stage, indicators of success include the existence of a podcast name, a podcast scenario, a material title, and a resource person. Product development involved producing audiovisual media packaged in the form of a podcast (completed within one month). The output was a seven-video comprehensive reproductive health information draft with the following description.

Table 1. Video Description

Video	Theme	Speaker
A	Values, self-concept, and self-limitations related to ASRH	Psychologist
B	Limits on relationships with the opposite sex among adolescents	Expert in the field of religion
C	Adolescent development	The head of the PHC
D	Reproductive health problems in adolescents	Director of the Indonesian Planned Parenthood Association of the Central Java Province
E	Gender and violence prevention	The chairman of the board of the *Kepedulian untuk Kakak* (KAKAK) Foundation
F	The role of information and communication technology in ASRH	Health Promotion Officer
G	Youth care, support, and health services	Village midwife

Notes: ASRH = adolescent sexual and reproductive health, PHC = primary health care

The development stage consisted of three stages: media validation, a small-group evaluation, and a field evaluation. This stage was conducted in Setabelan PHC because it has the same adolescent sexual and reproductive health (ASRH) characteristics as Pajang PHC. Thus, before entering the implementation stage at Pajang PHC, the development stage was conducted in a PHC with the same ASRH characteristics. The first stage was media evaluation by media and material experts. Both experts held qualifications as practitioners in health promotion and possessed academic credentials in reproductive health. The authors revised the media (seven podcast videos) according to the experts' input. The media were then tested in the second stage, a small-group evaluation involving 10 parents selected through purposive sampling with the following inclusion criteria: parents with adolescents aged 10–14 years who use gadgets and messenger platforms. The media will be revised based on the input given in the second stage.

The third stage was a field evaluation of 20 parents, selected using purposive sampling with the same criteria as those used in the small-group evaluation. If there were other inputs, it would be revised and continued to the implementation stage. The development stage instrument included picture (quality of shots, lighting, scene sequence, color, opening, image clarity and composition, and suitability of images to content), audio (audio packaging and clarity of words), material (material clarity and integration, ease of understanding, and references), language (diction and the use of simple language), appearance (speaker ability to explain the material, intonation, and articulation), and media persuasive quality (the media's ability to attract the target's attention). Using a 1–5 Likert scale instrument, the assessors (media and material experts, as well as 10 and 20 parents) assessed seven videos. The data were analyzed through a

quantitative descriptive method, which determined the media's eligibility level by percentage, and a qualitative method, which incorporated respondent feedback on the media.

The implementation stage was carried out with 10 parents of adolescents aged 10–14 years in the Pajang PHC working area, using a one-group pretest and posttest design and a purposive sampling technique. The criteria for parents who participated in the implementation stage were the same as those for parents in small groups and field evaluation. The parents were given knowledge of the ASRH questionnaire developed by the authors, which has been tested for validity and reliability on 30 parents in Setabelan PHC.

Nineteen questions with correct and incorrect answers were tested for validity and reliability with a Cronbach's alpha of 0.77. The steps taken were (a) measuring parents' knowledge about ASRH (pretest), (b) providing seven videos to parents, and (c) measuring ASRH knowledge in parents after being given seven videos (posttest). The parents participated in this study as respondents, and the purpose and benefits of the study were first explained to them. The parents were those who had agreed to participate without any coercion and were kept confidential or anonymous. The data were analyzed using the N-gain value with SPSS (free version). The following formula was used to determine the N-gain value. Classification of N-Gain score is high ($g>0.7$), moderate ($0.3<g\leq0.7$), and low ($g\leq0.3$).

$$\text{N-Gain} = \frac{\text{Posttest Score} - \text{Pretest Score}}{\text{Maximum Score} - \text{Pretest Score}}$$

The evaluation stage included a formative assessment to improve the media based on media validation results from the product development stage. A summative evaluation then determined the media's overall suitability, using effectiveness results from the implementation stage.

Results

This study involved developing reproductive health media in the form of audiovisual podcasts, following the ADDIE method. During the analysis stage, the authors investigated the problems and needs of parents concerning the desired media. The authors conducted FGDs with parents of adolescents aged 10–14 years. The parents expressed a desire for material on topics such as how to clean reproductive organs, puberty, how to consume blood supplement tablets to prevent anemia, the role of parents in reproductive health education, social limits for adolescents, sexual violence prevention, and factors influencing menstruation. The parents also hoped for educational methods tailored to their needs and requested that videos be presented by health workers or experts in the field, with a duration of 30–45 minutes.

The authors designed and arranged the media structure in order to determine the design scenario. The planned media is a podcast entitled "PAERESC NO PERES," formed from the words PAERESC—Parent-Adolescent Reproductive Health Communication, and NO PERES means "not lying." The topic chosen for the podcast is ASRH, with seven videos that align with parents' material needs. Each video addresses a different ASRH subtopic, ensuring parents receive a complete series covering all aspects of adolescent reproductive health. The podcasts are created through active discussions between a host and expert resource persons, each addressing the specific theme of a video. The third stage of media development involved making and recording audiovisual videos. Additionally, media validation was conducted with media experts (practitioners in the field of health promotion and media design) and material experts of ASRH, as planned, with the following media suitability assessment aspects.

Table 2. Percentage of Media Eligibility Level

Aspect (%)	Information
81–100	Very worthy
61–80	Worthy
41–60	Decent enough
21–40	Less eligible
0–20	Not feasible

Table 3. Results of Feasibility Assessments by Media and Material Experts

Aspect	Video A		Video B		Video C		Video D		Video E		Video F		Video G		Mean
	MED	MAT	MED	MAT	MED	MAT	MED	MAT	MED	MAT	MED	MAT	MED	MAT	
Picture	4.1	4.1	4.2	4.0	4.1	4.2	3.8	4.2	4.3	4.7	3.9	5.0	5.0	4.9	4.32
Audio	3.7	4.0	4.0	3.7	3.3	4.0	3.7	4.0	4.0	4.3	4.0	5.0	4.3	5.0	4.07
Material	3.4	4.0	3,9	3.8	4.5	4.0	4.1	4.8	3.9	4.9	4.8	5.0	4.5	4.9	4.32
Language	3.7	4.0	3,5	4.0	4.0	4.0	3.7	4.0	3.7	4.7	4.0	4.7	4.5	4.5	4.08
Appearance	4.6	4.8	4.0	4.8	4.0	4.8	5.0	4.2	4.4	4.4	5.0	5.0	5.0	4.8	4.55
Media persuasive qualities	3.3	4.7	3,7	4.0	3.7	4.7	4.7	5.0	3.7	5.0	4.0	5.0	4.0	4.0	4.25
Total score	22.8	25.6	23.5	24.7	23.6	25.6	25.0	26.2	23.9	28.1	25.7	29.7	27.3	28.1	
The average score for each video and each expert	3.8	4.3	3.5	4.0	3.9	4.3	4.2	4.3	3.9	4.7	4.2	4.9	4.5	4.7	
Average score for each video	4.0		3.7		4.1		4.2		4.3		4.5		4.6		
Eligibility Percentage	81%		79%		82%		85%		87%		92%		92%		

Notes: MED = value given by media experts, MAT = value given by material experts

Table 3 presents that six videos are very suitable for use. Video B was deemed suitable but required improvements in its audio and language. Based on validation by the two experts, the appearance aspect of the media received the highest average score. This was attributed to the excellent delivery of material by the host and speaker across all seven videos. The picture and material aspects received the second-highest score, indicating that the video quality was very good and accurately depicted the content.

Conversely, audio scored the lowest; its average was still above 4, indicating good quality, including background sound selection. The media's persuasive quality secured the third-highest average score despite some variations, demonstrating its effectiveness in encouraging desired behaviors. Based on expert assessments, six of the videos exceeded 80% suitability, indicating they are highly appropriate for the next stage. Video B was also suitable for continuation despite the score being below 80%. Notably, videos F and G achieved the highest suitability percentages in the expert media validation.

Table 4. Results of The Eligibility Assessment by 10 Parents and 20 Parents

Aspect	Video A		Video B		Video C		Video D		Video E		Video F		Video G		Mean	
	10P	20P	10P	20P	10P	20P	10P	20P	10P	20P	10P	20P	10P	20P	10P	20P
Picture	4.2	4.3	4.0	4.2	4.0	4.2	4.1	4.2	4.1	4.2	4.1	4.2	4.2	4.3	4.10	4.22
Audio	4.3	4.2	4.2	4.2	4.2	4.2	4.3	4.1	4.2	4.1	4.1	4.1	4.2	4.3	4.21	4.17
Material	4.3	4.3	4.3	4.2	4.3	4.2	4.3	4.3	4.2	4.4	4.2	4.4	4.3	4.4	4.27	4.31
Language	4.4	4.4	4.3	4.3	4.3	4.3	4.4	4.2	4.2	4.3	4.2	4.3	4.3	4.3	4.30	4.30
Appearance	4.1	4.3	4.3	4.2	4.3	4.2	4.3	4.3	4.4	4.2	4.0	4.2	4.3	4.2	4.24	4.23
Media Persuasive qualities	4.6	4.4	4.5	4.3	4.5	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.40	4.32
Total score	25.9	25.9	25.6	25.4	25.6	25,4	25.7	25.4	25.4	25.5	24.9	25.5	25.6	25.8		
The average score for each video	4.3	4.3	4.3	4.2	4.3	4.2	4.3	4.2	4.2	4.2	4.2	4.2	4.3	4.3		
Eligibility percentage	86%		85%		85%		85%		85%		84%		86%			

Notes: 10P = value given by 10 parents in the small group evaluation (the second stage, 20P = value given by 20 parents

Table 4 indicates that the percentage of eligibility for the seven videos is above 80%. The first- and second-highest percentage values of eligibility are the Videos A and G. In the small group evaluation (10 parents) and field evaluation (20 parents), the quality of the video for target persuasion is the aspect that obtained the highest average score in all videos. During a small group evaluation with 10 parents, their feedback indicated that the background music ended prematurely before the conclusion was complete and that the conclusion itself was too long. These issues were subsequently revised. Further input from a field evaluation with 20 parents requested the addition of information about the source at the beginning of the video. This input was also incorporated, and the revised media then proceeded to the implementation stage. The implementation was tested on 10 parents, who demonstrated a notable improvement in their average knowledge before and after watching the videos.

Table 5. Parents' Perceptions of Understanding of Material and Video Ability to Improve Communication Skills

Video	Parental Perception	
	Understanding the material after watching the video (%)	Video Ability to Improve Parent Communication Skills (%)
A	90	93.33
B	86.67	86.67
C	86.67	86.67
D	86.67	86.67
E	86.67	86.67
F	86.67	86.67
G	86.67	86.67

Table 5 shows that video A has the highest ability to provide knowledge to parents regarding the material in the video (90%). After watching the video, parents reported that their ability to communicate with adolescents about reproductive health increased by 93.33%. Table 6 indicates that the average score of parental knowledge increased before and after watching the seven videos about comprehensive reproductive health information. Based on the N-gain results, education with seven videos was effective in increasing parental knowledge of adolescent reproductive health.

Table 6. Result of the Implementation Stage

Parents Knowledge	
Pretest score	16.1
Posttest score	17.7
Maximum score	19.0
N-Gain	0.55*

*Moderate effectivity level

Discussion

Seven videos were successfully developed in podcast form in this study. The videos achieving the highest eligibility percentages were Video A, focusing on self-concepts and boundaries regarding ASRH, and Video G, addressing adolescent reproductive health services at the PHC. Video A's high score was primarily due to the speaker being a psychologist who was an excellent fit for the topic. Both videos also demonstrated an excellent ability to process persuasive sentences. Video G was also suitable for use because, according to the parents, the material presented was material that they had just learned about, which made them very interested in the topic. Video G also explained what is needed in order to access adolescent health services at the PHC. Attractive video packaging enables the target to gain new information without feeling patronized, so parents also believe that watching this video can entertain them while increasing their knowledge. This result confirms the study's findings conducted in Burkina Faso reported that enjoyable and entertaining media can catch people's attention to the material presented.[32]

The feasibility test with parents revealed that the audio aspect scored lowest among the seven videos, indicating a need for improvement in audio quality through the development of better tools. However, the media's persuasive ability received the highest average score from parents. These results suggested that parents found the video's message compelling, prompting them to consider adopting its recommendations. Conversely, experts rated the appearance of the material provider as the highest aspect. This result highlighted the critical role that the host and speaker selection plays an important role in determining the media's overall success. Parents also felt that Video A could help them understand the material on ASRH (90%) and understand how to communicate about ASRH (93.3%). In comparison, the other six videos generally received 86.67%, considering that the topic was more focused on self-concept and values in adolescents, which could help the parents better understand the characteristics of their adolescents and how to communicate with them. Conversely, Video E, which covered gender and violence prevention, was also highly favored by other parents, reflecting their desire to protect their adolescents.

Several factors likely contributed to the videos' success. Their multimedia nature, which combines visuals, audio, and expert commentary, likely catered to diverse learning styles, fostering greater parental engagement with the material. The inclusion of health professionals and experts also boosted the credibility of the information presented. Furthermore, the ease of accessing the videos likely increased engagement, as parents could watch at their convenience and revisit content as needed.[33]

This study also found that audiovisual content, in the form of podcasts about ASRH, was effective in increasing parents' knowledge about reproductive health, owing to several factors, including comprehensive material content, health

personnel, and credible speakers. The picture and audio increased parents' interest in viewing the video. Moreover, the inclusion of real-world examples of reproductive health problems that parents commonly encounter made the content highly relevant to their needs. These findings aligned with previous studies indicating that digital materials, videos, and expert sources can remarkably enhance parents' knowledge about health.[29,34,35] The audiovisual format, particularly the innovative seven-video podcast series, enhanced parents' knowledge about health. This is because the podcast fostered a two-way interaction between the presenter and resource persons, a key element of innovative health education.[36] Such engaging and novel media are crucial for health promotion, as they effectively capture audience interest in the material presented.[31]

This study also demonstrated that videos moderately increased parents' knowledge about reproductive health. The well-packaged video content was highly effective in increasing parents' awareness of this information. This finding was consistent with literature reviews indicating that visual media, such as pictures and videos, are an effective strategy for conveying health messages due to their memorability.[37]

Nonetheless, this study had limitations. The small sample size restricted the generalizability of the findings, and the lack of a control group made it challenging to definitively assess the effectiveness of the media. Furthermore, there was a potential for testing bias, in which respondents might have learned from the pretest, influencing their posttest answers. To address these issues, future research would benefit from including a control group.[38]

This study confirmed the effectiveness of videos in increasing knowledge about reproductive health. Therefore, the authors hope that parents will consistently access valid educational videos from health institutions. The health information gained can then empower parents to enhance their role in providing their adolescents with accurate health information. This is crucial because a strong parental role has been proven to improve adolescent health behavior and is essential for overcoming barriers adolescents face in accessing reproductive health information.[39,40]

Conclusion

Parents require media that can help them grasp adolescent reproductive health material and increase their overall knowledge on the topic. This study effectively demonstrates that audiovisual media improves parents' understanding of adolescent reproductive health. These videos enhance parental knowledge by presenting detailed material in an innovative format (podcasts), which effectively captures parents' interest. It is hoped that health institutions in Indonesia will develop health videos featuring resource persons who resonate with the target audience, encouraging parents to watch the videos in their entirety.

Abbreviations

SDGs: Sustainable Development Goals; HIV: Human Immunodeficiency Virus; PLHIV: People Living with HIV; PHC: primary health care; ADDIE: Analyze, Design, Develop, Implement, and Evaluate; FGD: Focus Group Discussion; ASRH: Adolescent Sexuality and Reproductive Health.

Ethics Approval and Consent to Participate

This study has been approved by the Health Research Ethics Committee, Faculty of Health Sciences, Universitas Muhammadiyah Surakarta Number 424/KEPK-FIK/VII/2024.

Competing Interest

The authors declare that there is no conflict of interest.

Availability of Data and Materials

All data collected during the study are presented in this manuscript, and no data from the study have been or will be published separately.

Authors' Contribution

TAIK: Conceptualizing, designing, the definition of intellectual content, conducting a literature search, experimental studies, data acquisition, data analysis, statistical analysis, manuscript preparation, editing, review, Guarantor; NLI and SA: designing, conducting experimental studies, manuscript editing, and review; AKU: editing and review; WL: designing, conducting a literature search, experimental studies, data acquisition, data analysis, statistical analysis, manuscript preparation, editing, and review; RNL: designing, conducting literature search, experimental studies, data acquisition, manuscript editing and review; T and RCD: designing, conducting experimental studies, data acquisition, manuscript review; YK: designing, conducting statistical analysis, manuscript review. IA: manuscript editing and review.

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