

# Reproductive Health Literacy of Adolescents at Public Islamic School: A Cross-Sectional Study in Indonesia

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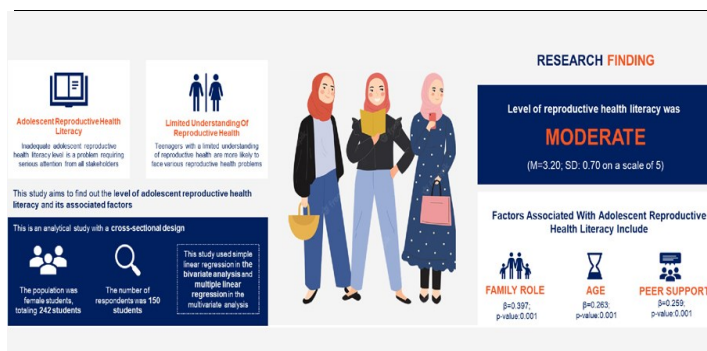
## ABSTRACT

Inadequate adolescents' reproductive health literacy is a serious problem that requires urgent attention from all stakeholders. Adolescents with limited knowledge of reproductive health are more prone to facing various health problems. Therefore, this study aims to determine the level of adolescents reproductive health literacy and its associated factors. An analytical approach was adopted with a cross-sectional design. The target population consisted of female students in classes XI and XII, at Public Islamic Senior High School 2 Banda Aceh, totaling 242 students. An accidental sampling method was utilized to select the sample, and the number of respondents was 150 students. The data obtained were analyzed using simple linear and multiple linear regression tests. The results showed that the level of reproductive health literacy was moderate (M=3.20; SD: 0.70 on a scale of 5), while the associated factors included family role ( $\beta=0.397$ ; p-value:0.001), age ( $\beta=0.263$ ; p-value:0.001), and peer support ( $\beta=0.259$ ; p-value:0.001). These variables accounted for 43.4% of the variance in adolescents reproductive health literacy ( $R^2:0.434$ ). Based on the results, it was concluded that the level of adolescents reproductive health literacy was insufficient, and factors correlated to this problem included family role, age, and peer support.

## ABSTRAK

Literasi kesehatan reproduksi remaja merupakan permasalahan yang serius yang membutuhkan perhatian segera dari berbagai pihak. Remaja dengan pengetahuan kesehatan reproduksi yang rendah lebih berisiko mengalami berbagai permasalahan kesehatan reproduksi. Penelitian ini bertujuan untuk mengetahui tingkat literasi kesehatan reproduksi remaja dan faktor-faktor yang berhubungan dengan literasi kesehatan reproduksi pada remaja. Penelitian ini merupakan penelitian analitik dengan desain cross-sectional. Populasi pada penelitian ini adalah siswi kelas XI dan XII di Madrasah Aliyah Negeri 2 (MAN 2) Banda Aceh, dengan jumlah 242 orang. Sampel pada penelitian ini dipilih menggunakan metode accidental sampling. Jumlah responden pada penelitian ini sebanyak 150 responden. Analisis data menggunakan uji regresi linier sederhana dan regresi linier berganda. Hasil analisis memperlihatkan bahwa tingkat literasi kesehatan reproduksi remaja adalah sedang (M=3,20; SD: 0,70 pada skala 5). Faktor-faktor yang berhubungan dengan literasi kesehatan reproduksi adalah peran keluarga ( $\beta=0,397$ ; p-value:0,001), usia ( $\beta=0,263$ ; p-value:0,001) dan dukungan teman sebaya ( $\beta=0,259$ ; p-value:0,001). Ketiga variabel ini menjelaskan 42,2% variasi literasi kesehatan reproduksi ( $R^2: 0,422$ ). Berdasarkan temuan penelitian ini, dapat disimpulkan bahwa tingkat literasi kesehatan reproduksi remaja masih belum memadai, dan faktor-faktor yang berhubungan dengan literasi kesehatan reproduksi pada remaja adalah dukungan keluarga, usia, dan dukungan teman sebaya.

## GRAPHICAL ABSTRACT



## Keyword

adolescent  
health literacy  
reproductive health  
schools  
students

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## INTRODUCTION

Health literacy is the ability to access, comprehend, as well as use health information and make health-related decisions. The level of individual health literacy is often reflected in their behavior (Vongxay et al., 2019). In the field of reproductive health, the relationship between the level of literacy and the problems of adolescents has been confirmed in previous studies (Thomas et al., 2017; Vongxay et al., 2019). Adolescents with a low level of reproductive health literacy are generally more at risk of facing various issues such as risky sexual behavior (Guan, 2021; Kyilleh et al., 2018), teenage pregnancy (Alzate et al., 2020; França et al., 2020), drug abuse (Park et al., 2017; Prihanto et al., 2021), abortion, and sexually transmitted infection (Kyilleh et al., 2018).

Globally, it is estimated that 21 million pregnancies occur among adolescents each year (Unicef, 2021). About 12 million are unintended, with 55% resulting in unsafe abortion (Sully et al., 2019; Unicef, 2021). In addition, 95% of these pregnancies occur in low-and middle-income countries, where many adolescents, particularly girls, have difficulty accessing reproductive health services such as contraception, and limited access to important information leading to poor literacy (Sully et al., 2019).

Teenage pregnancy has also been public health challenge in Indonesia with the 2017 Indonesia Demographic and Health Survey (IDHS) reporting 58.56% pregnancies among adolescents (Ministry of Health of Indonesia, 2018). This phenomenon is significantly associated with poor reproductive health literacy. Adolescents with poor reproductive health literacy have a lower possibility of accessing essential services (Arifah et al., 2022; Effendi et al., 2021), and a higher risk of engaging in premarital sexual behavior, despite poor knowledge regarding contraceptive methods (Astuti et al., 2020) and low educational attain-

ment (Effendi et al., 2021).

Numerous studies have identified factors contributing to the inadequate level of adolescents reproductive health literacy. One significant barrier in the process of conveying information and knowledge related to reproductive health is culture. In several communities worldwide, reproductive health is viewed as a sensitive and taboo topic. Therefore, parents and educators avoid discussing these matters with adolescents (Abdallah et al., 2017; Bashir et al., 2017). Another factor is reproductive health education system. In developing countries, the implementation of reproductive health education has not been carried out comprehensively, with no specific integration into school curriculum (Susanti & Doni, 2021; Walker et al., 2021). Consequently, only a portion of adolescents has access to reproductive health information, while others are left with inadequate knowledge in this domain (Fatimah et al., 2021).

In Indonesia, only a few studies have investigated adolescents reproductive health literacy. A study conducted in Semarang found that the level of reproductive health literacy was insufficient, with only 1 in 5 adolescents demonstrating an adequate level of literacy (Lakhmudien et al., 2019). Other studies only focused on poor reproductive health knowledge (Pradnyani et al., 2017; Yasmin et al., 2020) and low access to quality reproductive health services (Violita & Hadi, 2019; Yuliana, 2017). Cultural factors have also been linked to adolescents reproductive health literacy (Arifah et al., 2022; Nurachmah et al., 2018). Parents, especially those living in rural areas avoid addressing reproductive health matters at home and in the community, as these problems are considered sensitive and taboo (Arifah et al., 2022). Moreover, some parents believe that discussing reproductive health is unnecessary, and adolescents will understand this matter after marriage

(Nurachmah et al., 2018; Widjanarko et al., 2022). The educational system also contributes to adolescents' lack of reproductive health literacy. Inconsistency of reproductive health education has resulted in inadequate awareness among adolescents (Ratnawati et al., 2019).

Several studies have been conducted on adolescents reproductive health in Aceh Province including adolescents' attitude and knowledge (Najallaili & Wardiati, 2021; Setyowati et al., 2019), risky sexual behavior (Amrullah, 2014; Astuti et al., 2021), risky dating behavior (Najallaili & Wardiati, 2021), and pre-marital sexual intercourse (Amrullah, 2014). However, less attention has been given to adolescents' reproductive health literacy and the related factors. This study aims to provide information related to the level of adolescents' reproductive health literacy level and its associated factors.

## METHODS

This study employed a cross-sectional design to investigate adolescents' reproductive health literacy level and associated factors. The target population was female students of classes XI and XII at Public Islamic Senior High School 2 Banda Aceh (*Madrasah Aliyah Negeri 2 Banda Aceh*), totaling 242. The sample comprised 150 respondents selected using the accidental sampling method, while data were collected using a questionnaire from July 23 to September 23, 2022.

The questionnaire used was a self-administered instrument with some questions modified from Health Literacy Measure for Adolescents (HELMA) which was developed by Ghanbari et al. (2016). A team from Reproductive Health Department of the Faculty of Public Health University of Muhammadiyah Aceh then reviewed the content. The justification for modifying HELMA questionnaire was based on the flexibility of the questions which

could be tailored to encompass various aspects of adolescents reproductive health. This included the anatomy and physiology of reproductive organs, organ hygiene, puberty, menstruation and changes in secondary reproductive organs, pregnancy and prevention of unintended pregnancies, unsafe abortion, knowledge of contraceptive methods, sexually transmitted diseases, violence and sexual abuse, smoking behavior, and substance abuse. Although there are several Reproductive Health Literacy (RHL) instruments, the questionnaire content was focused primarily on reproductive and sexual health (Ma et al., 2021). Therefore, it was deemed unsuitable for implementation in this particular study.

This reproductive health literacy instrument was used to assess four main dimensions namely the ability to access, understand, evaluate, and apply reproductive health information. This instrument consisted of 22 items and used a Likert scale (1-5) consisting of 1 (never), 2 (rarely), 3 (sometimes), scale 4 (frequently), and 5 (always). Reproductive health literacy level was then grouped into three intervals with scores of 1-2.87, 2.88-3.27, and 3.28-5 indicating a "poor", "moderate", and "high" literacy level respectively.

Questionnaires were also used to assess role of teachers, as well as support from health workers, family, and peer. These instruments employed a Likert Scale (scale of 1-5) with 1, 2, 3, 4, and 5 corresponding to "never", "rarely", "sometimes", "frequently" and "always." Furthermore, data on the history of reproductive health problems were collected using semi-open questions and a checklist that contains information about the type of reproductive health problems experienced by respondents.

A simple linear regression test was used to determine the relationship between each independent and dependent variable. Sub-

**Table 1***The Characteristics of Respondents*

Characteristics	Frequency	Percentage
Age (year)		
15	15	10.00
16	76	50.67
17	57	38.00
18	2	1.33
Class		
XI	67	44.67
XII	83	55.33
Family income		
Below is the minimum wage of Aceh Province	102	68.00
Equivalent or above the minimum wage of Aceh Province	48	32.00
Education level of respondents' mothers		
Elementary or junior high school	21	14.00
Senior high school	93	62.00
University	36	24.00
Internet access		
Seldom	2	1.33
Most of the time	87	58.00
Always	61	40.67

sequently, a multiple linear regression test was utilized to perform multivariate analysis with a confidence level of 95%. Ethical approval was obtained from Health Research Ethics Commission, Faculty of Medicine, Syiah Kuala University, and Dr. Zainoel Abidin General Hospital (number: 183/EA/FK-RSUDZA/2022). Before collecting the data, the objectives, benefits, confidentiality, volunteerism, and questionnaire-filling procedures were explained to the respondents, followed by signing informed consent.

## RESULTS

The results showed that the respondents were between 15 and 18 years old, with 50.7% being 16 years old. More than half were in class XII (55.3%) and 68.0% reported that their family income was less than the minimum wage of Aceh Province. The majority of the respondents' mothers (61.0%) were senior high school graduates. More than half (58.0%) had adequate internet access, while 1.3% seldom used the internet. [Table 1](#) presents details about the characteristics of the respondents.

[Table 2](#) presents reproductive health problems experienced by the respondents. Based on the results, 93.3% of the respondents have experienced at least one reproductive health problem. Among the nine identified problems, 48.0% of the respondents reported having menstrual cycle abnormalities, 87.3% had cramps and pain before or during menstruation, and 72.7% had emotional problems before menstruation. Additionally, 58.0% suffered excessive menstrual bleeding (menorrhagia), 55.33% experienced vaginal inflammation, and 4% had a history of physical/sexual violence.

[Table 3](#) shows that the level of adolescents reproductive health literacy was moderate ( $M = 3.20$ ;  $n: 150$ ;  $SD: 0.70$  on a scale of 5). The association of each independent to the dependent variable was tested using simple linear regression, and the results are presented in [table 4](#). There was a significant relationship between age ( $p$ -value: 0.001;  $R^2: 0.920$ ), teacher ( $p$ -value: 0.003;  $R^2: 0.590$ ), health workers ( $p$ -value: 0.010;  $R^2: 0.440$ ) family role ( $p$ -value: 0.001;  $R^2: 0.320$ ), history of reproductive health problems ( $p$ -value: 0.039;  $R^2: 0.290$ ) peer sup-

**Table 2**  
*Reproductive Health Problems Experienced by Respondents*

Reproductive Health Problems	Responses (%)		
	Yes	No	No response
Menstrual cycle abnormalities	48.00	52.00	0
Menstrual duration >14 days	18.00	82.00	0
Cramp or pain before or during menstruation	87.33	12.67	0
Emotional problems (before menstruation)	72.67	27.33	0
Menorrhagia	58.00	42.00	0
Physical/sexual abuse by boyfriend/other close friends	4.00	96.00	0
Anemia	21.33	78.00	0.67
Vaginal inflammation (itching and vaginal discharge)	55.33	44.67	0
Sexual harassment	0.67	99.33	0

port (p-value: 0.001;  $R^2$ :0.505) with reproductive health literacy of adolescents. Therefore, it can be concluded that as adolescents get older, and receive more support from the teacher, health workers, family, as well as peer groups, they tend to have fewer reproductive health problems, resulting in a higher level of reproductive health literacy.

As depicted in table 5, three factors were found to be consistently associated with adolescents reproductive health literacy namely family role ( $\beta$ : 0.397; p-value: 0.001), age ( $\beta$ : 0.263; p-value: 0.001), and peer support ( $\beta$ : 0.259; p-value: 0.001). The ANOVA test showed that the regression model was fit (p-value: 0.001). This implied that all independent variables in the model collectively influenced adolescents reproductive health literacy. Pearson's Correlation Test showed R: 0.659 meaning that the association between independent and dependent variables was moderate. Additionally, the coefficient determination ( $R^2$ : 0.434) indicated that this model could explain approximately 43.4% of the variance in adolescents reproductive health literacy.

**Table 3**  
*The Level of Adolescents Reproductive Health Literacy*

Variable	Mean	n	SD
Reproductive Health Literacy Level	3.2*	150	0.7

Note: \* = Scale with low=1-2.87, moderate:= 2.88-3.27, and high 3.28-5

## DISCUSSION

This study showed that the level of adolescents reproductive health literacy was insufficient. In the bivariate analysis, six factors were found to be significantly associated with adolescents reproductive health literacy namely family, peer, teacher, health workers support, as well as age and history of reproductive health issues. However, in the multivariate analysis, only three factors were consistently associated including role of family, peer support, and age with an  $R^2$  value of 0.434. It was concluded that the correlation between family role, peer support, age, and adolescents reproductive health literacy was moderate.

Family plays a significant role in an individual's growth and development processes, impacting their knowledge and behavior (Mollborn & Lawrence, 2018; Peterson, 2005). This study discovered that family role significantly influenced adolescents reproductive health literacy. Compared to other variables, such as age and peer support, family role made a greater contribution. This result aligns with ecological theory suggesting that human



**Table 4**  
*Factors Associated with Adolescents Reproductive Health Literacy*

Variable	R <sup>2</sup>	β	p-value
Age	0.92	0.303	0.001*
Teacher role	0.59	0.242	0.003*
Health worker support	0.44	0.209	0.010*
Family role	0.32	0.562	0.001*
History of reproductive health problems	0.29	-0.169	0.038*
Peer support	0.25	0.505	0.001*

Note: \* = significance with  $p < 0.05$

growth and development processes are influenced by various determinants, with family role making a significant contribution (Bronfenbrenner, 1989). Furthermore, role of family support in health literacy has been confirmed in previous studies (Kanellopoulou et al., 2022; Schlenker et al., 2022). Family plays a significant role in transferring information and knowledge related to reproductive health to adolescents (Hamzah et al., 2018; Kanellopoulou et al., 2022).

Based on the results, the information given by family members to adolescents regarding reproductive health was lacking in comprehensiveness. It primarily focused on limited topics such as menstruation, reproductive organs, dating, puberty, teenage pregnancy, and sexually transmitted infections. This limited transmission of information and knowledge can be attributed to their mothers' educational background. A significant proportion of mothers possessed a moderate level of education, with the majority having completed senior high school, and just below a quarter holding a university degree. This educational disparity affected their ability to discuss a wide range of reproductive health topics with their teenage children. These findings are consistent with a study on the perspectives of Javanese parents regarding reproductive health education. It was reported that parents, particularly mothers with limited formal education, tend to have poor communication with their children in terms of repro-

ductive health topics (Widjanarko et al., 2022).

This study also found that 68% of the respondents belonged to family with a monthly income below the regional minimum wage of Aceh Province. A previous study reported an association between family income and parents-children communication regarding reproductive health (Kistiana et al., 2023). Furthermore, Widjanarko et al. (2022) found that parents with lower income tend to have poor communication on reproductive health with their teenage children. Socio-cultural factors may also influence how family communicate and share knowledge about reproductive health, but this study did not measure these variables specifically.

The results showed that only one-third of the respondents reported gaining knowledge about reproductive health topics, such as menstruation, reproductive organs, dating, and puberty, from their family members, particularly from mothers or sisters. Additionally, only two-thirds reported receiving information about teenage pregnancy and sexually transmitted diseases from their family (mothers or sisters). Some other respondents also stated that they received information from the Internet. The majority of the respondents (98.6%) had sufficient access to the Internet, giving them additional sources of reproductive health information. Previous studies have mentioned that access to the Internet significantly affected adolescents reproductive health literacy (Khairunnisa et al., 2023; Vongxay et al., 2019). The Internet has become

**Table 5**  
*Predictors of Adolescents Reproductive Health Literacy*

Variables	$\beta$ (Unstandardized)	Standard Errors	$\beta$	t	P-value
Constant	-2.955	1.074		-2.751	0.007*
Family role	0.287	0.055	0.397	5.217	0.001*
Age	0.277	0.66	0.263	4.216	0.001*
Peer support	0.185	0.54	0.259	3.396	0.001*

Note: \* = This model is significant at a 95% Confident Interval; Pearson's Correlation Test with  $R= 0.659$ ;  $R^2= 0.434$

an important platform for adolescents to get information related to reproductive health topics (Ibegbulam et al., 2018; Vongxay et al., 2019).

This study showed that peer support played a vital and influential role in shaping adolescents reproductive health literacy. Khairunnisa et al. (2023) and Syrilla (2022) have also highlighted the positive impact of peer involvement in enhancing adolescents reproductive health literacy. Peer influence was significant due to the reliability, social acceptance, shared experiences, information exchange, support, and role modeling provided (Brown & Anistranski, 2020). Recognizing and harnessing this influence can be instrumental in designing effective interventions and educational programs that leverage peer networks to promote comprehensive reproductive health literacy among adolescents.

In terms of topics shared with peer, this study found that two-thirds of the respondents shared information and sought advice related to reproductive health issues from their friends. Others gained access to information through sources such as the internet, teachers, or health workers. Based on the results, the majority of respondents were found to have adequate access to the internet connection, thereby increasing their chances of accessing reproductive health information from the internet. However, this study did not analyze how the Internet influences adolescents reproductive health litera-

cy. Other reproductive health sources include teachers and health workers but these two factors showed no significant correlation.

In addition, respondents also received support from friends when analyzing information and making decisions related to reproductive health issues. Friends provided emotional support, shared experiences, fostered a non-judgmental environment, offered peer support, and granted access to shared resources, all contributing to a more informed as well as confident decision-making process (Brown & Anistranski, 2020).

Several studies have highlighted the importance of peer as a reliable source of information for adolescents (Arifah et al., 2022; Brown & Anistranski, 2020). One key reason for this is the disparity in perspectives on reproductive health issues between parents and adolescents (Syrilla, 2022). Many parents feel awkward discussing reproductive health topics with their children (Maina et al., 2020; Widjanarko et al., 2022) making it challenging for adolescents to communicate about such matters with their parents. In the end, adolescents choose to express their feelings and tell their problems to friends who generally have similar problems and perspectives.

Age undeniably affects how adolescents obtain, discern, and comprehend information about reproductive health (Najallaili & Wardiati, 2021; Setyowati et al., 2019). Based on the results, age was considered a significant

predictor of adolescents reproductive health literacy. This finding was consistent with previous studies (Dongarwar & Salihu, 2019; Vongxay et al., 2019). Age is closely related to psychological and social maturity in adolescents (Brown & Anistranski, 2020). Older adults find it easier to communicate and solve reproductive health problems. In addition, they possess better skills in assessing reproductive health information and making decisions related to their reproduction (Arifah et al., 2022; Dabiri et al., 2019).

The multivariate analysis showed that role of teachers, support from health workers, and a history of reproductive health problems were not significantly associated with adolescents reproductive health literacy. Many teachers lack a comprehensive understanding of adolescents reproductive health (Joseph et al., 2021; Juariah & Irianto, 2020). Therefore, teachers should be well-trained on this topic to enhance their understanding and deliver quality information as well as provide counseling to their students. This will in turn lead to a substantial improvement in students' knowledge (Widyatuti et al., 2018).

The results also showed that support from health workers did not significantly affect adolescents reproductive health literacy. Health workers have been promoting reproductive health to adolescents, but the intensity and the resources presented are not comprehensive (Maesaroh, 2020). Consequently, not all adolescents receive information and gain knowledge about reproductive health from health workers, making their efforts less significant.

The history of reproductive health problems did not correlate with adolescents reproductive health literacy. Most respondents reported experiencing reproductive health problems, such as stomach cramps or emotional changes before the monthly period which were considered normal (Sharma et al., 2021). How-

ever, further investigation is needed to understand the intensity and severity of reproductive health problems faced by adolescents and their intention to learn deeper about such issues.

## CONCLUSIONS

This study discovered that adolescents' reproductive health literacy was found to be inadequate. Several factors were identified to have contributed to this poor literacy including family role, peer support, and age. Compared to peer support and age, family role had a greater influence on reproductive health literacy of adolescents. The results also showed that many respondents suffer from problems related to reproductive health, such as cramps or pain before and during menstruation as well as emotional problems.

A key strength of this study is that the results provide information about reproductive health literacy level and its associated factors, but there were certain limitations. The sample only involved female students, hence, the results do not represent the male adolescents group. Further studies are suggested to measure reproductive health literacy in a broader scope such as involving male and female students from various schools. A qualitative approach is also highly recommended to deeply explore reproductive health problems experienced by adolescents, particularly females. Furthermore, moderated mediation analysis should be used to identify whether the association between family role, age, and peer support with reproductive health literacy of adolescents is mediated or moderated by other factors.

School-based and community-based interventions are proposed to improve reproductive health literacy of adolescents with comprehensive training for both teachers and students, taking into consideration the sociocultural conditions of the community. There is also a need to develop age-appropriate curriculum that re-



spects local norms, values, and religious beliefs. Furthermore, the engagement of community leaders, religious scholars, and parents is essential to ensure cultural sensitivity in the design and implementation of the program. Workshops and awareness campaigns should also be carried out to address sociocultural barriers that hinder open communication about reproductive health. Peer educators who have a deep understanding of the local sociocultural context should be empowered to effectively engage with their peer and provide accurate information. Monitoring and evaluation mechanisms need to be established, and advocacy for comprehensive reproductive health education policies is recommended. These interventions will promote reproductive health education while upholding community values, traditions, and religious beliefs, ultimately empowering adolescents to make well-informed decisions regarding their reproductive health.

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#### AUTHORS' CONTRIBUTIONS

Wardiati designed the study, formulated the concept, chose the appropriate methodology, analyzed the data, wrote the first version of the manuscript, reviewed the manuscript, approved the final version, and submitted the manuscript to the OJS system. Riza Septiani, as a second writer, was also involved in designing the study, critically reviewing the article, participating in data collection and fieldwork, writing the discussion section, and revising the manuscript. Agustina contributed to writing the first version of the manuscript, reviewing and revising the manuscript, and reading and approving the final manuscript. Putri Ariscasari critically reviewed the manuscript, analyzed the data, revised the manuscript, and designed the graphical abstract. Nopa Arlianti designed the study, conducted data analysis, and revised the manuscript. Tiara Mairani reviewed the manuscript, revised the

manuscript, and performed the fieldwork.

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#### COMPETING INTERESTS

The authors confirm that all of the text, figures, and tables in the submitted manuscript work are original work created by the authors and that there are no competing professional, financial, or personal interests from other parties.

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