Pregnancy health literacy among teenagers in Kaysone district, Savannakhet province, Lao PDR

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Abstract

Background and Objective: Pregnancy health literacy especially among teenagers is a major protective factor for teenage pregnancy. In Lao PDR, 15% of mother mortality cases are teenage mothers while 18% of girls aged 15-19 have begun child bearing and are more common in rural than urban areas. The aim of this study was to describe pregnancy health literacy and its related factors among teenagers in Kaysone district.

Method: This was a cross-sectional study conducted in two villages. The TPHL score was collected in face to face interviews with 262 adolescents using 33 items in January 2019. Calculation of the TPHL index score was based on the HL-EU index formula. The TPHL index was also based on the HL-EU standard level and descriptive statistics were used to explain the score and levels. Descriptive analyses were performed to analyse the individual, family, peer and school variables and to investigate the level of TPHL and linear regression was used to identify factors related to TPHL.

Result: The overall score of TPHL was a mean of 27.07. Most (60%) of the adolescents had problematic TPHL levels and only 0.4% had excellent TPHL levels. There were 15 independent variables in the model of TPHL and after multivariate analysis, TPHL was positively associated with living in urban areas (β=2.42; p=0.002), higher education (β =3.89; p<0.001), schooling (β=0.96; p=0.001), being single (β=1.9; p<0.001), higher education of father and mother (β=0.72; p=0.007; β=0.37; p=0.001) and attending classes where sex education content was included (β=5.12; p<0.001).

Conclusion: The study results showed that most adolescents had problematic TPHL levels. Low TPHL scores show the importance of sexual education for adolescents to be improved and also of increasing TPHL for a good health situation in Lao PDR.

Keywords: teenager, pregnancy, teenage pregnancy, health literacy

Background

Worldwide maternal deaths associated with pregnancy and childbirth are significant components of mortality for girls aged 15–19 [1]. Eleven percent of all pregnancies are among adolescents aged 15–19 years and one in four women have had a live birth before age 18 [2]. Notably about 95% of these pregnancies occur in low- and middle-income countries [3]. Many adolescent girls have difficulties with accessing and understanding information about sexual and reproductive health (SRH) and are less likely to use contraceptives than adults [4].

Adolescents who had a higher frequency of getting health information were found to have a higher level of health literacy [5, 6]. Inadequacy of health literacy (HL) has been related to frequent poor health outcomes, such as poor overall health status and higher mortality [7]. HL at an early age can help develop one's ability to understand health information and improve interactions with the health care system [8]. Maternal health literacy (MHL) is defined as a woman's knowledge, skill, and ability to gain access to, understand, and use information in ways that promote and maintain her health and that of her children [9]. Education about pregnancy health literacy (PHL) especially among teenagers is a major protective factor for teenage pregnancy (TP) [3]. SRHL goes beyond knowledge and behavior and reflects the motivation and competences to access, understand, appraise and apply SRH information into informed decision making. Based on the concept of SRHL [10]. Teenage pregnancy health literacy (TPHL) focuses on the ability of an individual to access information, understand the information, and appraise and apply the information into informed decision making for teenage pregnancy prevention.

In Lao PDR, TP is still an important public health problem. According to LSB and MOH, 15% of mother mortality cases was comprised of teenage mothers and 18% of girls aged 15-19 had begun child bearing and these girls were more common in rural than urban areas [11] while, the maternal mortality rate was high at 197 deaths per 100,000 live births [12]. Seventy percent of the young population reside in rural areas with the largest number in the major provinces of Savannakhet, Vientiane and Champasak [13]. The low HL [14] and high rate of TP in Lao PDR indicates that there is a lack of Sexual knowledge and effective education among adolescents. This can be party associate with low rates of school attendance, where sex education content was included [3, 11, 15]. Adolescents who study in rural areas had a lower sexual and reproductive health literacy (SRHL) score (16.2) and those who rarely or never attended SRH subject classes regularly had lower SRHL (17) [10].

Therefore, education is very important because the level of education is a strongly related factor and a low level of education has been identified as a contributing factor to the occurrence of adolescent pregnancy [16].The higher the level of education one attains, the higher the level of HL. Further, access to reproductive health information has been found to have a positive impact on the HL in adolescents [17].

In present, more research focused on the situation of HL and its relation with adverse health behaviors and outcomes [18]. That is why there is shortage of information related to what is the real situation of TPHL and the related factors among teenagers aged 15-19. Therefore this study was conducted to provide information with the aim is to describe PHL and its related

factors among teenagers (15-19 years old) in Kaysone district, Savannakhet Province, Lao PDR. Findings of this research can help the health provider and other stakeholders to improve reproductive health services for this target population.

Methods

Study setting and design

This study employed a quantitative method with a cross-sectional design. The questionnaire was structured for a quantitative survey in face to face interviews to assess the self-capacity of teenagers in Kaysone district, Savannakhet Province, Lao PDR in accessing, understanding, appraising, and applying information on SRH for decision making. The period of study was from 2018 August to 2019 May.

Study sample

Teenagers aged 15-19 years, both male and female, unmarried and married, schooling and non-schooling, were the study population. We found 262 teenagers through multi-step sampling from 332 teenagers from the two villages. Savannakhet Province has 15 districts, from which Kaysone district was purposely selected because of the existence of the Youth Friendly Service (YFS). The YFS has been implemented in this district since 2012. Next, two villages across this district was randomly selected ('lottery' pick up). A list of all the adolescents aged 15-19 living in these two villages was obtained, after which a systematic random sampling technique was used to select the study participants.

Research instruments

A structured questionnaire consisted of two parts: TPHL and individual, family, peer and school information. Based on previous study by Vonxay [10], which included pregnancy, contraception and abortion, this study focuses on pregnancy and contraception among a sample of adolescents in community. In this study, the validity of the questionnaire was first tested in a pilot survey among 40 adolescents in Vientiane. Completing the questions took the adolescents 30-35 minutes. The design was assessed as complete and sufficient; only small adjustments were made. The response rate for the TPHL questions was good. Internal consistency calculated met a level of 0.85 on Cronbach's alpha [19]. The data of TPHL among population is normal distribute.

The measurement of the TPHL level employed 33 items under four components: accessing (7 items), understanding (8 items), appraising (6 items) and applying (12 items) vis-à-vis health related information using a 4-point Likert scale: 1=very difficult, 2=fairly difficult, 3=fairly easy and 4=very easy.

We calculated the TPHL score using the formula using the formula "Index score = (mean - 1)*(50/3)". The measurements were divided into four categorical levels: Inadequate literacy, problematic literacy, sufficient literacy and excellent literacy. The cut-off points of these categories follow those categorical of the TPHL, inadequate: 0-25, problematic: >25-33, sufficient: >33-42 and excellent: >42-50 Both the formula and the scales were adopted from the European health literacy survey (HLS-EU-Q47) method [20].

Statistical analysis

Descriptive analyses were performed to analyze the individual, family, peer and school variables and to investigate the level of TPHL. Linear regression was used to identify the factors related to TPHL. Comparisons between groups were made with independent Chi-square tests, t-tests (2 variables) and one-way ANOVA (more than 2 variables). Only factors with a p-value of 0.05 or lower on these tests were included in the multiple linear regression model. For this model, a backward elimination strategy was used, with a p-value of 0.05 as the cut-off level of significance. Linear regression results were presented as unstandardized regression coefficients.

Ethical considerations

The ethic clearance was obtained from the National Ethics Committee for Health Research, Ministry of Health, Lao PDR and the International Review Board of the Hanoi University of Public Health.

Results

The overall score of TPHL was a mean of 27.07 (Fig 1). Most of the adolescents had scores in the range of 'problematic' TPHL level, ranging between 25 and 33 based on the HLS-EU interpretation. Further inspection revealed that 158 had a HL score in the 'problematic' range (59.9%) and only one respondent (0.4%) showed 'excellent' TPHL. The result showed 57.2% of them found it difficult to find information about activities that they could join about contraceptives, teenage pregnancy. Almost 67% of teenagers found it difficult to understand what to do in case they/their girlfriend had a dangerous problem related to pregnancy. Three-fifths (60.0%) felt it was easy to judge the quality of information from their family and friends about pregnancies and contraceptives. 66.4% of the respondents found it difficult to decide what to do when they or their girlfriend had a problem related to pregnancy.

Table 1 presents the relationship between PHL among teenagers aged 15-19 and individual factors. A significant association between the education level of teenagers and TPHL *(*$p<0.001$*)* in that the higher the level of education of the adolescents, the higher their TPHL score was a significant association between the marital status of teenagers and TPHL score ($p=0.006$). In addition, there was a significant association between father's education and TPHL level (*p-value* 0.003). Likewise, there was a significant association between mother's education and TPHL level ($p=0.043$). There was a significant association between attending of classes where sex education content was included and TPHL level ($p<0.001$): Teenagers who had attended these classes had a higher TPHL level (28) than those who had not attended such classes (20.4). In this study, no significant associations were found between TPHL scores and age, gender, living status of adolescent, family income and marital status of parent and number of participant taken course or activity related to sex education 1 month before.

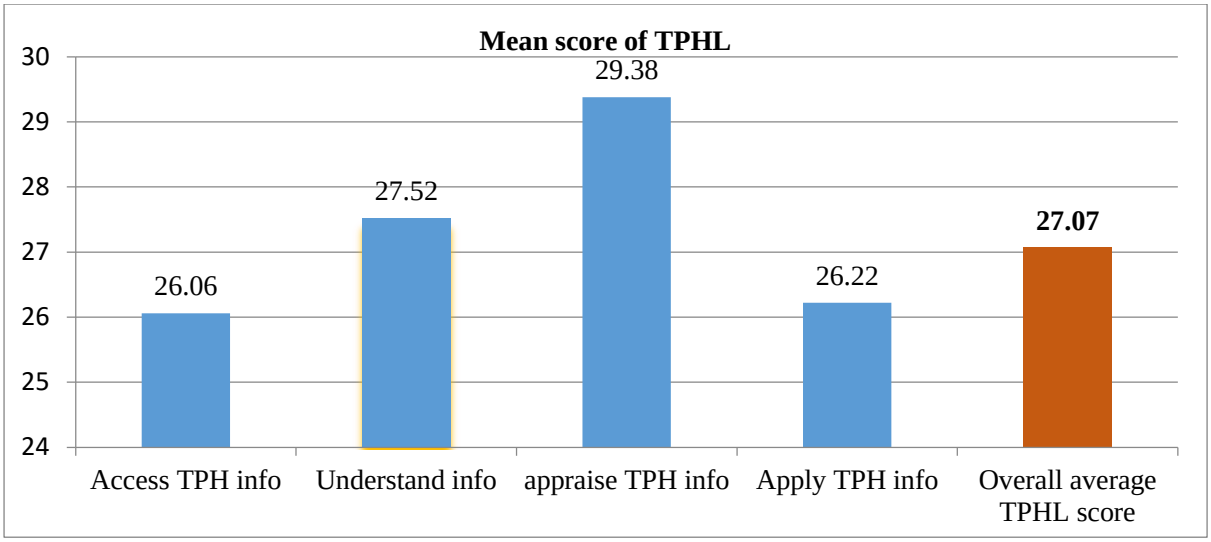

Fig 1: Mean score of TPHL

Table 1: Individual, family, peer and school factors related to TPHL score

Characteristics of teenagers variables	**Total teenagers n=262**	**TPHL score**	**p-value**
	Freq. (%)	**Mean**	
Individual			
Age (years) Mean=17.66	-	-	-
Mean=17.66 ± 1.3, min=15, max=19, Pearson's correlation (0.156)			
Sex			0.078
Male	99(38)	27.8	
Female	163(62)	26.6	
Living area			<0.001*
Rural	114(43.5)	24.7	
Urban	148(56.5)	28.9	
Schooling status			<0.001*
Out of school	51(19.5)	22.3	
Lower secondary school	27(10.31)	22.5	
Upper secondary school	103(39.31)	28.3	
University	81(30.92)	28.7	
Marital status			<0.001*
Single	237(90.5)	27.6	
In-union	4(1.5)	22.4	
Married	19(7.2)	21.9	
Divorced/separated	2(0.76)	23.7	
Living status of adolescent			0.56
Living with parents	219(83.6)	27	
Living with sibling/spouse/alone	43(16.4)	27.5	
Family			
Father's occupation			0.006*

Characteristics of teenagers variables	Total teenagers n=262	TPHL score	p-value
	Freq. (%)	Mean	
Gov./private staff	55(21)	28.8	
Laborer	54(20.6)	26.7	
Farmer	123(47)	26	
Merchant	30(11.4)	28.6	
Father's educational level			0.003*
Never went to school	23(8.8)	25.1	
Primary school	72(27.5)	25.7	
Lower secondary school	45(17.2)	26.2	
Upper secondary school	65(24.8)	28.4	
Vocational school	15(5.7)	29.3	
University	42(16)	29.6	
Mother's occupation			0.002*
Gov./private staff	23(8.8)	28.9	
Laborer	20(7.6)	24.9	
Farmer	159(60.7)	26.4	
Merchant	60(22.9)	28.4	
Mother's educational level			0.043*
Never went to school	38(14.5)	25.6	
Primary school	77(29.4)	26.2	
Lower secondary school	64(24.4)	27.2	
Upper secondary school	59(22.4)	27.9	
Vocational school	7(2.7)	29.3	
University	17(6.5)	30.2	
Family income [(a)]			
Mean=265 ± 187, min=$11.7, max=$1,176**,** Pearson's correlation 0.1			
Peer			
Talk about sexual health (pregnancy/ contraception) with friend			0.537
Yes	86(32.8)	26.7	
No	176(67.2)	27.2	
School			
Attended classes where sex education content was included			<0.001*
No	33(12.6)	20.4	
Yes	229(87.4)	28	
Number of times participant had taken a course or activity related to sex education in the month before			0.104
Nil/1 time	234(89.3)	26.8	
More than 1 time	28(10.7)	28.6	

(a) Mean age of teenagers was 265 ± 187, min=11.7 max=1176. Based on spearman's correlation, family income wasn't found to be correlated with TPHL score.

(*) The p-value of less than 0.05 was used to determine the statistical significance of the tests with a regression coefficient to predict the strength and direction of the association

The significant factors with a p-value of 0.05 or lower on these tests were included in the multiple linear regression model [21]. Seven independent variables (p-value indicated by **) had significantly correlated with TPHL, with $p<0.05$. The table 2 showed that TPHL was associated with living in urban areas ($\beta=2.42$; $p=0.002$), higher education ($\beta=3.89$; $p<0.001$), schooling ($\beta=0.96$; $p=0.001$), being single ($\beta=1.9$; $p<0.001$), higher education of father ($\beta=0.72$; $p=0.007$), higher education of mother ($\beta=0.37$; $p=0.001$) and attendance of classes where sex education content was included ($\beta=5.12$; $p<0.001$). However, father's occupation ($\beta=0.47$, $p=0.205$) and mother's occupation ($\beta=0.72$, $p=0.207$) were not significant direct predictors for TPHL scores in this study. See table 2 for more details.

Table 2: Factors associated with level of TPHL in Kaysone district

Variables	**Regression coefficient (β)**	***p*-value**	**95%CI**	
			Lower	**Upper**
Individual				
Living Area				
Rural	Ref.			
Urban	2.42	0.002**	0.879	3.962
Highest level of education completed:				
Primary school	Ref.			
Lower/Upper secondary school	3.89	<0.001**	2.784	5.005
School status				
Out of school	Ref.			
Schooling	0.96	0.001**	0.404	1.518
Marital status				
Married/divorced/separated/in-union	Ref.			
Single	1.9	<0.001**	0.842	2.927
Family				
Father's education				
Never went to school	Ref.			
Some level of education	0.72	0.007**	0.201	1.245
Fathers' occupation				
Framer/laborer	Ref.			
Gov./private staff/merchant	0.47	0.205	-1.263	1.223
Mother's education				
Never went to school	Ref.			
Some level of education	0.37	0.001**	0.206	0.949
Mothers' occupation				
Framer/laborer	Ref.			
Gov./private staff/merchant	0.72	0.207	1.393	2.927

Variables	Regression coefficient (β)	*p*-value	95%CI	
			Lower	Upper
School				
Attend the class where sex education content included				
No	Ref.			
Yes	5.12	<0.001**	6.034	10.792

*significant association (p<0.05)

**significant association (p<0.01)

Discussion

This study described TPHL (15-19 years old) in Kaysone district, Savannakhet Province, Lao PDR and factors affecting it. The results in our study showed that most adolescents have a 'problematic' TPHL level. As this was the first time TPHL was measured, comparative literature was lacking, so the most closely related parameters by a previous study [10], on SRH rather than TPHL, were used for this study. Overall, 89.7% (n=235) of teenagers were found to have a 'problematic' or less than sufficient TPHL on the index. However, adolescents were able to formulate fairly complex responses in the interviews to demonstrate ability in accessing, understanding, appraising and applying health information. This study showed that the four components also revealed less than sufficient TPHL. These scores indicated that the adolescents studied did not possess the competence to maintain and improve their quality of life [18].

In contrast, the previous study by Vongxay et al (2019) had inadequate SRHL among adolescents aged 15-19. Thus it seems possible that the slightly higher TPHL of the teenagers is due to the YFS implemented and running there, with its activities providing information about SRH (including pregnancy and contraception) in schools and the community and also providing health services for adolescents. Adolescents thus had access to resources at the YFS in addition to access to other information sources like libraries, print media, television, radio and the Internet. Such access can have an impact on the literacy patterns and the overall health of the society. Even if the 15 to 19 years age range selected for this study meant that the younger respondents would not have received sex education in school and might not have started a sexually active life yet, educational levels in the sample population were probably the most relevant factor in TPHL. The study by Vongxay et al (2019) looked at schooling adolescents in three provinces with only Vientiane capital running a YFS.

When looking at predictive factors for TPHL levels, seven significant ones were identified: living area, education, schooling status, marital status, father's education, mother's education and attendance of classes with sex education content. Apart from father's occupation and mother's occupation, which proved not to be significant factors for TPHL levels in this study, individual, family, peer and school factors contributed to the predictive model. This finding was consistent with those in the literature [10, 14, 22-24]. Those previous studies as well as this study did not found associations between age and HL because the sample of teenagers was smaller in age range [10, 23, 25].

One finding of this study is that more than half of the adolescents with a high TPHL level lived in an urban area (56.5%). This is consistent with the previous study [10], which indicated that adolescents who lived in urban areas showed a significant association with SRHL level (β=3.21*: p*<0.001). Individuals residing in rural areas, on the other hand, were more likely to have low HL [23]. It may be inferred that urban conditions facilitate access to information, which in turn enables better care, treatment, health protection and health promotion than rural areas. Area, whether urban or rural, is thus considered a factor strongly associated with HL. Being healthy suggests having the opportunity to recognize health problems, which comes with access to information on health, including SRH and thereby PHL.

This study revealed that there was a statistically significant relationship between adolescents' education and TPHL, a finding corroborated by the results of previous studies that adolescents with a lower educational attainment were associated with lower estimated HL [23, 25]. In general, level of education is a factor associated with "basic literacy skills", and in a study by Wallace, those who had a higher level of education were found to score higher on health literacy [16]. Higher education also comes with more knowledge on sexuality and reproductive health. In Savannakhet, the Ministry of Education and Sports have been able to bring education and health into reproductive health education at the end of the course. In all, it means that higher education itself is a major protective factor for teenage pregnancy: more years of schooling is associated with less teenage pregnancies [3].

Adolescents who are in school have a greater chance of higher TPHL scores. In a study by Martin et al., adolescents who were still in lower primary school or in General Education Development were associated with lower estimated health literacy (p<0.01) [23]. Given that literacy, or the ability to read and write, is an integral part of health literacy, schools therefore play a central role in the development of TPHL skills. With school-based comprehensive sexuality education programmes, teachers have an opportunity to encourage adolescents to delay sexual activity and encourage them to behave responsibly when they eventually engage in consensual sexual activity, particularly by using condoms and other modern methods of contraception [24].

In this study, the adolescents who were single were more likely to have higher TPHL score (27.5) than the others (22.1). The results of the research by previous studies demonstrate that individuals who were not married also had lower HL, on average, although the association was much weaker [23].The difference in this study that may be explained by the fact that the single teenagers had the greater opportunity to study in school and thus to receive sexual health information and teenage pregnancy health information. Moreover, this research showed that most of the adolescents who were single had attended classes in school with sex education content included.

Attendance of classes where sex education content is included is one of the key factors in TPHL because such participation exposes and the adolescents to specific SRH matters that are related to pregnancy and contraception. The finding of this study showed that almost all of the adolescents had attended classes with some sex education content (89.3%). The relationship between such class attendance and TPHL score was significant. Similar to the findings of Vongxay V. [10], this research found that there was an association between TPHL

score and attending these classes. Such education on sexuality is more likely to have a positive impact when it is comprehensive and implemented by trained educators and educators who have the opportunity to encourage adolescents to delay sexual activity and encourage them to behave responsibly when they eventually engage in consensual sexual activity [24]. Such input from these educators can have an impact on literacy patterns and societies' health at large.

This research has found that there was a significant association between educated parents and TPHL. Education levels of parents in this study were found be quite high. In addition, the results also reveal that higher TPHL scores happened in the group of parents with high education and were found to be an important predictor for the TPHL of the study participants. These findings corroborate the results of previous studies that parents who had no education were 2.5 times less likely to have SRH knowledge than the parents who had secondary or tertiary education [26]. Parents play central roles, both directly and indirectly in determining the future of their adolescents. They may impart information about sexuality and prevention of pregnancy or they may withhold vital information [24]. But higher educational levels of parents may enhance communication between them and their adolescents. Better-educated parents may also have more time to care for their children, which would in turn have an effect on the TPHL scores of their children.

This study also has some limitations. Firstly, participant recruitment and data collection were confined to one geographical area. This means that the sample may not be representative of all the adolescents in Lao PDR and does not address different contexts. This study is of a cross-sectional study design, so it prevents us from being able to assess the temporal order of TPHL. Thirdly, a questionnaire on TPHL would elicit rather sensitive information of the issue among adolescents. Fourthly, data collection was planned to avoid school hours, taking place during the early morning, evening hours and weekends. This was problematic because some adolescents, especially those who had to help on their family farms, were not able to stay at home much later than usual and so missed the sampling process. In an effort to address this issue, a small number of sites were replaced after those working on the farms arrived. The other issue was that the responses from adolescents which have been from perceptions of TPHL from the influence of what their parents might really have perceived, so this is important for future researchers to ask the adolescents about how much they have talked to their parents about pregnancy prevention or sex related topics.

Conclusion

From this study, most teenagers in Lao PDR have either a problematic TPHL level (60%) or an inadequate one (30%). Lower levels of TPHL were found among teenagers with less actual education, living in a rural area, out of school, married/divorced/separated/in-union, or who have attended classes where the sex education was included. These teenagers also had lower scores if their fathers and mothers had lower education. The results also identified seven predictors that were significant ($p<0.001$), namely, living area, education, marital status and status of school as individual factors, father's and mother's education as parental factors and attended classes where sexual education content was included as school factors.

This research adds understanding to the TPHL situation in Lao PDR and emphasizes the importance of good quality, curriculum-based sex education programs which include pregnancy prevention among teenagers in secondary schools (education sector). Therefore, there is a need for more training of teachers and the development of sustainable sex education programs (with a focus on pregnancy prevention) in schools. In the health sector, there is the ongoing need to enhance the availability of YFS for pregnancy prevention. In relation to that, there is a need to strengthen the capacity of service providers to respond to specific needs of adolescents more effectively with greater sensitivity. Parents should be educated on the importance of offering helpful advice for pregnancy prevention to their adolescents and giving correct information on pregnancy prevention issues according to their ages. Qualitative research should be further embarked on and be more in-depth to get clearer insight into parents' and their adolescents' specific problems and TPHL.

List of abbreviation

HL: Health Literacy; Lao PDR: Lao People's Democratic Republic; LSB: Lao Statistics Bureau; MHL: Maternal Health Literacy; PHL: Pregnancy Health Literacy; SRH: Sexual Reproductive Health; SRHL: Sexual Reproductive Health Literacy; TP: Teenage Pregnancy; TPHL: Teenage Pregnancy Health Literacy; YFS: Youth Friendly Service

Consent for publication

Not applicable.

Availability of data materials

This datasets analyzed during the current study are not publicly available due to the privacy policy imposed by the UHS but may be available from the corresponding author on reasonable request.

Completing interests

The authors declare that they have no completing of interest.

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Authors' contributions

PS performed the literature review, drafted and revise the manuscript. PS performed the statistical analysis. NTH and VH made contribution to the statistical analysis, interpretation of results and made contributions to manuscript revision. All authors read and approved the final manuscript.

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