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The Relationship Between Parenting Confidence and Attachment in Fathers of Preterm Infants: A Cross-Sectional Study

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ABSTRACT
Objective: The aim of this study was to investigate the relationship between parenting confidence and attachment in fathers of preterm infants. **Materials and Methods:** This cross-sectional study was conducted with fathers of preterm infants between the ages of 6-12 months at the time of data collection (n=149). The data were collected using the Sociodemographic Questionnaire Form, Paternal-Infant Attachment Scale (PIAS) and Karitane Parenting Confidence Scale (KPCS). **Results:** The average age of the fathers participating in the study was 25.75±4.64 years. It was found that the fathers who felt ready to be a father during pregnancy, who held their baby as soon as it was born, and who participated in the care of their children had statistically significantly higher mean PIAS and KPCS scores than the other group ($p<0.05$). There was a statistically significant positive correlation between the mean PIAS and KPCS scores of the fathers ($r=0.43$, $p=0.000$). **Conclusion:** It can be said that as fathers' confidence in parenting increased, their attachment to their children also increased. Fathers should be made aware of the importance of the father-infant relationship in the healthy growth and development of children.
Keywords: Attachment, Confidence, Infant, Father, Parenting, Nursing.

Preterm Bebeklerin Babalarında Ebeveynlik Güveni ve Bağlanma Arasındaki İlişki: Kesitsel Bir Çalışma

Amaç: Bu çalışmanın amacı preterm bebeklerin babalarında ebeveynlik güveni ve bağlanma arasındaki ilişkinin incelenmesidir. **Gereç ve Yöntem:** Bu kesitsel çalışma, verilerin toplandığı tarihte 6-12 ay aralığında olan preterm bebeğe sahip babalar ile yürütülmüştür (n=149). Veriler Sosyodemografik Anket Formu, Baba-Bebek Bağlanma Ölçeği (B-BBÖ) ve Karitane Ebeveyn Kendine Güven Ölçeği (KEKGÖ) kullanılarak toplanmıştır. **Bulgular:** Araştırmaya katılan babaların yaş ortalaması 25.75±4.64 yıldır. Prenatal dönemde kendini baba olmaya hazır hisseden, bebeğini doğar doğmaz kucağına alan ve çocuğunun bakımına katılan babaların B-BBÖ ve KEKGÖ ölçek puan ortalamalarının diğer gruba göre istatistiksel olarak anlamlı düzeyde yüksek olduğu bulunmuştur ($p<0.05$). Babaların B-BBÖ ve KEKGÖ puan ortalamaları arasında pozitif yönde istatistiksel olarak anlamlı düzeyde bir ilişki saptanmıştır ($r=0.43$, $p=0.000$). **Sonuç:** Babaların ebeveynlik konusunda kendilerine olan güvenleri arttıkça çocuklarına olan bağlanma düzeylerinin de arttığı söylenebilir. Çocukların sağlıklı büyüme ve gelişmesinde baba-bebek ilişkisinin önemi konusunda babalar bilinçlendirilmelidir.
Anahtar Kelimeler: Bağlanma, Güven, Bebek, Baba, Ebeveynlik, Hemşirelik.

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INTRODUCTION

Parenting confidence is defined as an internal belief or judgment about being successful and capable in parenting roles (Vance & Brandon, 2017). A confident parent is more empowered to manage their parenting-related roles and often perceives these demands as less stressful than other parents (Vance et al., 2021). Parental confidence contributes to the parent-infant relationship and infant development in multiple ways. However, parenting confidence may vary according to the individual, situation and time (Seetharaman et al., 2022). Mothers and fathers who are confident in parenting can spend more time with their children (Li & Guo, 2023). Infants are dependent on their parents' ability to actively support their development, especially in the first year of life (Seetharaman et al., 2022). In focus group discussions with parents and health professionals, parenting confidence was found to consist of the themes of being able to feed the baby, establishing sleep routines, interpreting the cause when crying, playing with the baby, communicating, responding to needs, and coping with minor illnesses (Vance et al., 2021). Attachment is a state that the infant or young child develops internally, through repeated experiences of sensitive and responsive interactions with the caregiver, as a "safe base" from which to explore the environment and be assured that comfort and protection will be available when needed (Kohlhoff et al., 2022). Parents are the first examples in the formation of attachment behaviors. The fact that individuals often refer to their parents' behaviors for the relationships they will establish in their future lives is an indication that attachment is transmitted between generations. Studies show that attachment developed in infancy continues in later periods and children of securely attached parents also show secure attachment (Tabachnick et al., 2022). While children generally prefer their mothers for their care needs, they prefer their fathers for activities such as play (Vance et al., 2021; Kohlhoff et al., 2022). It is stated that fathers are as important as mothers for healthy attachment. It has been observed that infants who can establish a healthy relationship with their fathers in early infancy develop secure attachment. The father spending quality time with his child, playing games with him and participating in his care strengthens the relationship between them positively (Önem & Özcan, 2023). Contrary to the high number of studies on mother-infant attachment in the literature, there are very few studies examining attachment in fathers with preterm infants and its relationship with parental confidence (Stefana & Lavelli, 2017; Filippa et al., 2021). It is known that communication between father and child contributes to the child's cognitive and psychological development, especially by reinforcing their exploratory behaviors (Rollè et al., 2019). For this reason, knowing the factors that affect the formation of secure attachment and nurses evaluating family health by taking these factors into consideration will be very important for child development. In line with this information, the aim of this study is to examine the relationship between parenting confidence and attachment in fathers of premature infants.

MATERIALS AND METHODS

Study design

This study was conducted in a cross-sectional design.

Population and sample of the study

The data was collected between June and October 2024 from fathers who applied to the pediatric outpatient clinics of a hospital in Kahramanmaraş province, which straddles the Mediterranean and Eastern Anatolia Regions of Turkey. The study population consisted of all fathers who applied to the pediatric outpatient clinic of the relevant hospital between the data collection dates (N=190). Using the 'sample selection formula for a known population group' [$(n = Nt^2pq/[d^2(N-1)+t^2pq)$, (N=190, p=0.5, q=0.5, d=0.05, t=1.96)], the minimum required sample size was calculated to be 128 with a 95% confidence interval. The inclusion criteria for the study were fathers whose premature babies were between 6-12 months old, and who did not have communication difficulties or a diagnosed mental illness.

Survey instruments

In the study, data were collected with Sociodemographic Questionnaire Form, the Paternal-Infant Attachment Scale and the Karitane Parenting Confidence Scale.

Sociodemographic Questionnaire Form

The researchers developed a descriptive information form for fathers by reviewing relevant literature (Yılmaz, & Oskay, 2021; Arslanlı, & Çelebioğlu, 2022; Gül, & Bulut, 2022; Bulut et al., 2023). In this form, there are 22 questions to obtain data such as the father's age, level of education, employment status, support for the baby's care and feeding, etc.

Paternal-Infant Attachment Scale (PIAS)

The scale was developed by Condon et al. (2008) to determine the level of father-infant attachment in 6-12 month-old babies. The validity and reliability study of the Turkish form was conducted by Güleç and Kavlak (2013). The 19-item scale is a five-point Likert type and consists of three subdimensions (patience and tolerance, pleasure in interaction, and affection and pride). 12 items in the scale are reverse-order items. Each item of PIAS takes a value between 1 and 5 and the minimum score that can be obtained from the scale is 19 and the maximum score is 95. The higher the score obtained from the scale, the better the attachment. Güleç and Kavlak (2013) determined that the scale's Cronbach Alpha reliability coefficient was 0.76. In this study, the scale's Cronbach alpha value was 0.71.

Karitane Parenting Confidence Scale (KPCS)

The original scale developed by Crncec et al. (2008) consists of 15 items. The scale was designed by health

professionals to measure parents' competence and self-efficacy related to parenting in early parenting. It is suitable for use with parents with infants between 0-12 months. Although the sample group was mothers during the development of the scale, it was reported that it could also be used to assess the confidence of fathers in parenting. The scale, the validity and reliability of which was conducted by Yılmaz and Oskay (2021), consists of 14 items. The scale includes two sub-dimensions (infant care and parenting role) and only item 11 is reverse scored. Each item in the scale is scored between 0-3. The score range is 0-42 and higher scores indicate higher parental confidence. The Cronbach's α value of the scale was found to be 0.93. Cronbach's alpha value of the scale was 0.89 in this study.

Statistical analysis

In the study, the data were analyzed using the IBM SPSS Statistics 23 program on the computer. The descriptive characteristics of the participants were analyzed using frequency n (%) for categorical variables and mean and standard deviation for continuous variables. Normal distribution of the data depends on the skewness and kurtosis values being between ±3. The independent samples t-test, and the one-way analysis of variance (ANOVA) were employed for categorical variables with normal distribution. Mann Whitney U Test was used in paired groups and Kruskal Wallis-H test was used in more than two groups in data without normal distribution. For continuous variables, the associations were evaluated using Pearson's correlation. The significance level was set at $p < 0.05$.

Ethical considerations

Before the study, ethics committee approval was acquired from the Ethics Committee of XXX University, Faculty of Medicine (Approval Number: 2023/03, Date: 14/03/2023), and required permissions were acquired from the management of the relevant hospital. All participants provided written informed consent before the questionnaires were administered, and could withdraw from the study at any time. The fathers who provided written consent were included to the sample after the participants had been informed about the objective of the study, the location and method of data use, and the confidentiality of the responses.

RESULTS

The average age of the fathers participating in the study was found to be 25.75±4.64 years. The results of the descriptive characteristics of 149 fathers are presented in Table 1. It was determined that 48.3% of the fathers included in the study were primary/secondary school graduates, 51.7% perceived their economic level as insufficient, 89.9% were employed, 61.7% had babies born between 24-29 weeks, and 79.2% were born by cesarean section.

While there was no significant difference between the mean PIAS scores of the fathers participating in the study and family type, employment status, gender of the baby and number of living children, there was a statistically significant difference between the mean PIAS scores and age, education level, perceived economic level, mode of delivery and gestation week ($p<0.05$). Accordingly, compared to the other groups, the mean PIAS scores of the fathers whose education level was university and whose income was higher than their expenses were higher, while the mean scores of the fathers who were between the ages of 23-27, whose baby was born by cesarean section, and whose baby's gestational week at birth was 24-29 were found to be lower. There was no significant difference between the mean KPCS scores of the fathers who participated in the study and the level of education, family type, employment status, gender of the baby, mode of delivery and number of living children, whereas there was a statistically significant difference between the mean KPCS scores and age, perceived economic level and gestational week ($p<0.05$). Accordingly, it was found that the mean scores of the fathers who were 38 years of age and older, whose income was higher than their expenses and whose gestational week at birth was 33-37 were higher than the other groups (Table 1).

It was found that 65.8% of the fathers who participated in the study did not have a planned baby, 61.7% did not feel ready to be a father, and 62.4% did not participate in the care needs of their infant (Table 2). When the PIAS and KPCS mean scores of the fathers who participated in the study and the statements about the father's relationship with his infant were examined, it was found that there was no statistically significant difference between the scales and the fact that the baby was planned ($p>0.05$), while the fathers who felt ready to be a father during pregnancy, who held their baby as soon as it was born, and who participated in the care of their children had statistically significantly higher mean scale scores than the other group ($p<0.05$) (Table 2).

The mean PIAS score of the fathers participating in the study was 61.06±6.64 (high level of paternal attachment) and the mean KPCS score was 22.90±4.43 (moderate level of confidence). There was a statistically significant positive correlation between the mean PIAS and KPCS scores of the fathers ($r=0.43$, $p=0.000$). Accordingly, it can be said that as fathers' confidence in parenting increased, their attachment to their children also increased. In addition, a statistically significant positive correlation was found between the mean PIAS score and Infant Care, a sub-dimension of the KPCS, and between the mean KPCS score and Pleasure in Interaction and Affection and Pride, sub-dimensions of the PIAS ($p<0.05$) (Table 3).

Table 1. Examination of the difference between the descriptive characteristics of the participants and the scales (N=149).

Variables		n	%	PIAS Mean±SD	KPCS Mean±SD
Age (Year)	23-27 (1)	14	9.4	56.01±3.87	21.78±2.72
	28-32 (2)	63	42.3	58.65±4.98	20.68±4.08
	33-37 (3)	57	38.3	63.686±6.762	24.31±4.10
	38 and older (4)	15	10.1	65.93±7.36	27.93±1.09
test/p				**F:14.051/ 0.000**^{**,a,b}	**KW:46.972/0.000**^{**,b,e}
Educational status	Primary/ Secondary (1)	72	48.3	61.35±5.71	22.79±4.49
	High school (2)	58	38.9	59.60±6.62	22.79±4.25
	University (3)	19	12.8	64.42±8.71	23.68±4.93
test/p				**F: 4.063/0.019***^{*,c}	KW:1.001/0.606
Perceived economic level	Income less than an expense (1)	77	51.7	61.49±6.60	23.44±4.92
	Income equivalent to an expense (2)	51	34.2	58.88±4.83	21.50±3.22
	Income more than an expense (3)	21	14.1	64.78±8.63	24.33±4.37
test /p				**F: 6.657/0.002**^{**,c,d}	**KW: 12.249/0.002**^{**,c}
Family type	Nuclear family	122	81.9	61.29±6.34	22.77±4.45
	Extended family	27	18.1	60.00±7.91	23.51±4.37
test /p				t:0.916/0.361	Z: -0.623/0.533
Employment	Working	134	89.9	61.25±6.38	22.81±4.41
	Unemployed	15	10.1	59.40±8.69	23.73±4.68
test /p				t: -1.023/0.308	Z: -0.915/0.360
Gender of newborn	Female	62	41.6	60.44±6.40	22.69±4.17
	Male	87	58.4	61.50±6.80	23.05±4.63
test/p				t: -0.954/0.341	Z: -0.629/0.530
Type of delivery	Vaginal	31	20.8	61.50±6.80	24.09±4.81
	Cesarean birth	118	79.2	60.10±6.01	22.59±4.30
test/p				**t: 3.575/p:0.000****	Z: -1.826/0.068
Gestational age (week)	24-29 (1)	92	61.7	58.51±4.49	20.93±3.60
	30-32 (2)	41	27.5	64.86±7.60	25.12±4.04
	33-37 (3)	16	10.7	65.96±7.31	28.56±0.72
test/p				**F: 23.152/0.000**^{**,a,d}	**KW:59.967/0.000**^{**,a,d}
Number of living children	First	49	32.9	60.81±6.07	22.91±4.17
	2 and more	100	67.1	61.18±6.92	22.90±4.58
test/p				t:0.315/0.753	Z: -0.033/0.974

PIAS: Father–Infant Attachment Scale, KPCS: Karitane Parenting Confidence Scale, F: One-way ANOVA test, KW: Kruskal Wallis test, t: Independent sample t test, Z: Mann Whitney U test, Results of the statistically significant pairwise comparisons (Tamhane's T2 post-hoc test for ANOVA test or Dunn's test, post-hoc test for Kruskal Wallis test): a: 1-3, b: 1-4, c: 2-3, d:1-2, e:2-4, *p<0.05, ** p<0.001

Table 2. Examining the difference between scales and statements regarding father-child relationship (N: 149).

Variables		n	%	PIAS Mean±SD	KPCS Mean±SD
Pregnancy planning status	Planned	51	34.2	13.77±2.29	22.33±4.77
	Unplanned	98	65.8	13.42±1.88	23.20±4.24
Test/p				t:0.960/0.338	Z:-0.661/0.509
Feeling ready to become a father	Yes	57	38.3	14.50±2.35	25.95±3.22
	No	92	61.7	12.95±1.55	21.02±4.03
Test/p				**t:4.401/0.000****	**Z:-6.910/0.000****
Touching/holding the baby when the baby is born	Yes	31	20.8	14.19±2.39	24.10±4.81
	No	118	79.2	13.37±1.90	22.59±4.30
Test/p				**t:3.575/0.000****	Z:-1.82/0.068
Taking your infant for regular health check-ups	Yes	113	75.8	13.59±2.17	23.17±4.55
	No	36	24.2	13.38±1.54	22.05±3.98
Test/p				t:1.273/0.205	Z:-1.58/0.114
Participating in their infant's care needs	Yes	56	37.6	14.55±2.33	26.01±3.21
	No	93	62.4	12.93±1.55	21.03±4.00
Test/p				**t:4.709/0.000****	**Z:-7.032/0.000****
Perception of parenting relationship with spouse	Weak	53	35.6	12.63±1.52	21.50±3.74
	Strong	96	64.4	14.05±2.11	23.67±4.61
Test/p				**t:-3.348/0.001****	**Z:-3.166/0.002****

PIAS: Father–Infant Attachment Scale, KPCS: Karitane Parenting Confidence Scale, t: Independent sample t test, Z: Mann Whitney U test, *p<0.05, ** p<0.001

Table 3. The relationship between parenting confidence and attachment level in fathers

Variables[¥]	Mean	SD	1	1.1	1.2	1.3	2	2.1	2.2
1. PIAS	61.06	6.64	1	**0.778****	**0.641****	**0.703****	**0.427****	**0.463****	0.067
1.1. Patience and Tolerance	27.89	4.63		1	0.065	0.**183***	0.145	**0.169***	-0.030
1.2. Pleasure in Interaction	19.61	2.50			1	**0.715****	**0.530****	**0.544****	**0.212****
1.3. Affection and Pride	13.54	2.03				1	**0.411****	**0.455****	0.026
2. KPCS	22.90	4.43					1	**0.981****	**0.588****
2.1. Infant Care	15.16	3.95						1	**0.422****
2.2. Parenting Role	7.74	0.93							1

[¥]: Pearson correlation analysis, PIAS: Father–Infant Attachment Scale, KPCS: Karitane Parenting Confidence Scale, *p<0.05, ** p<0.001

DISCUSSION

This study was conducted to determine the relationship between secure attachment and parenting confidence between fathers and infants in the Turkish population. The mean PIAS scale score of the fathers participating in the study was 61.06±6.64. The highest score that can be obtained from PIAS is 95 and the higher the score, the higher the attachment level. Considering the total mean score of the fathers in this study, it can be said that fathers are attached to their babies above the medium level. In the study by Serçekuş and Başkale (2016) examining father-infant attachment, the mean total score of PIAS was found to be 78.55±0.63 and 75.68±10.01 in Kartal and Erişen's (2020) study. In the study conducted by Düdükçü and Arslan (2020), the attachment level was found to be 70.81±8.22. We can say that the results of this study are similar to the literature.

In the study, while the mean PIAS scores of the fathers whose education level was university and whose income was higher than their expenses were higher than the other groups, the mean scores of the fathers of premature babies who were between the ages of 23-27, whose babies were born by cesarean section and whose babies were born between 24-29 weeks were found to be lower. On the other hand, Dinç and Balci (2021) did not report a significant relationship between attachment score and father's age in his study. Similar to our study, some studies reported that the attachment scores of fathers over the age of 40 were significantly higher. This suggests that these different results in the literature may be specific to the group in which the study was conducted (Kartal & Erişen, 2020; Kılan & Özpınar, 2020).

One of the striking findings of the study was that fathers of babies born between 24-29 weeks of gestation had low paternal attachment scores. This is very significant in terms of showing that the psychological and emotional stress of preterm birth may still continue to have an effect on fathers. This finding suggests that premature births may have an effect on parent-child attachment. Especially in this type of developmental processes, it may be more difficult for fathers to bond with their babies (Akik & İşbir, 2022). It is also possible that fathers may feel inadequate or helpless after preterm birth. Fathers feeling inadequate or being under stress may negatively affect paternal attachment. As another factor, the fact that the mother is at the forefront in contact with the baby in intensive care may cause fathers to remain in the background in this process and this may change attachment scores (Svendsrud et al., 2023; Bakermans-Kranenburg & van IJzendoorn, 2023).

In the study, the attachment scores of fathers with high income level were found to be significantly higher. The new addition to the family may be a factor that increases socio-economic anxiety. Therefore, it was thought that low income level may negatively affect father-infant attachment. Many studies on father-infant attachment conducted in our country support this finding (Kartal & Erişen, 2020; Düdükçü & Arslan, 2020; Dinç & Balci, 2021; Bulut et al., 2023). The fact that fathers are not in economic distress and have a high level of education may support the attachment status.

In the study, factors such as feeling ready to become a father, holding the baby immediately after birth and active participation in childcare significantly increased father attachment scores, indicating that parent-child attachment can be consciously and actively supported. Holding the baby as soon as the baby is born is a powerful step that initiates the attachment process by providing the father's first physical contact with his baby. This contact not only reinforces the father's sense of fatherhood but also contributes positively to the father's sense of trust by creating an emotional closeness with the baby. Research has demonstrated the positive psychological effects of physical contact on both the infant and the parent (Chen et al., 2017). Therefore, this contact at birth is expected to increase attachment scores (Bigelow & Williams, 2020; Bulut et al., 2023).

When the findings of the study are evaluated, it is seen that the attachment scores of fathers who participate in the physical care of their infants are significantly higher. Involvement in childcare allows the father to spend more time with his baby, develop his ability to respond to the baby's needs and get to know the baby in this process. Fathers' involvement in childcare creates a sense of trust and belonging in the parent-child relationship, which strengthens father-infant attachment. In addition, fathers' involvement in childcare makes them feel more competent and successful and develops a positive perception of the fathering role (Chen et al., 2017). The combination of these factors contributes to significantly higher father attachment scores. Although studies on father-infant attachment are very limited in our country, it is reported in the literature that parents who participate in the care of their children have a better level of attachment with their children (Asalıoğlu, 2017; Kartal & Erişen, 2020; Dinç & Balci, 2021). Considering the results of the study, nurses have many opportunities to support fathers in antenatal classes, child health clinics and hospital settings to encourage children's development in this sense. Supporting fathers from the prenatal period by nurses, who have an important educational role in infant care, will be a pioneer for early initiation of postnatal father-infant communication.

Another striking finding of the study is that the attachment scores of fathers with a strong sense of confidence are also positively high. It is also clear that participation in the care of the baby and effective communication with the baby are effective in this situation. Fathers' increased confidence in parenting is an important factor that directly affects their attachment to their children. Confidence in parenting strengthens fathers' belief in their ability to meet their children's needs and their acceptance of this role. Confident fathers are more willing and comfortable spending more time with their children, forming emotional bonds with them and actively participating in their children's development. This contributes to the strengthening of the father-child bond. Similar studies on the subject support the findings of this study (Vance & Brandon, 2017; Mouton et al., 2018; Jeong et al., 2020). In addition, as fathers' confidence increases, they feel closer to their children and become more sensitive to their children's needs. This confidence increases fathers' patience with their children's behaviors and their capacity to understand their emotional needs. Confident fathers show a calmer and more consistent stance in their interactions with their children, which makes their children feel safe and supports mutual trust in their

relationships (Jeong et al., 2020; Sarkowi et al., 2023). Nurses play an important role in creating opportunities for fathers to bond with their babies and support the adoption of the fatherhood role starting in the intensive care environment. They are also effective in supporting fathers to overcome the emotional difficulties they experience during the hospital process. In one study, it seems that for fathers with babies in the intensive care unit, the attitude and communication style of nurses outweighed the delivery style of their babies. Inconsistent messages and incorrect guidance from nurses can affect fathers' confidence and experience in caring for their premature babies (Stefana et al., 2024). This will also negatively affect the bonding process. Therefore, nurses' observation of fathers' attachment behaviors, identification of risky situations and early intervention, and gaining fathers' trust through a supportive approach to parenting roles will contribute to the healthy attachment processes of premature babies.

Study limitations and strengths

One of the study limitations involved the cross-sectional design. While this design can establish association, it cannot determine causation. Another limitation of the study was the small sample size. Additionally, the data were evaluated in line with the personal answers given to the questions included in the measurement tool.

CONCLUSION

It can be said that as fathers' confidence in parenting increased, their attachment to their children also increased. In line with the information obtained from this study that the father's sense of parenting confidence is an important parameter in the father-infant attachment process. Nurses can contribute to this process by encouraging fathers' participation in infant care processes and providing trainings and supportive guidance to increase their confidence in the role of fatherhood. Such practices that increase fathers' confidence in premature infant care create positive results in terms of both the development of the infant and the strengthening of emotional bonds within the family by strengthening father-infant attachment. Thus, the child can have a healthier physical, social and psychological environment throughout his/her life with early father-infant attachment.

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Conflict of Interest

The author declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Author Contributions

Plan, design: ST, SYÇ; **Material, methods and data collection:** ST; **Data analysis and comments:** ST, SYÇ; **Writing and corrections:** ST, SYÇ.

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Ethical Approval

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