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Pain, kinesiophobia, and mental training skills in mobile esports players: A cross-sectional study

Mobil espor oyuncularında ağrı, kinezyofobi ve zihinsel antrenman becerileri: Kesitsel bir çalışma

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Abstract

Aim: This study examined relationships among neck and upper extremity pain, functional disability, kinesiophobia, and mental training skills in mobile esports players with musculoskeletal pain.

Materials and Methods: A cross-sectional study was conducted with 210 mobile esports players in Türkiye. Participants completed demographic questionnaire, Neck Disability Index, QuickDASH, Tampa Scale for Kinesiophobia, and Mental Training Inventory in Sports. Data were analyzed using Pearson correlation and multiple regression after normality verification.

Results: Pain intensity showed a significant positive correlation with kinesiophobia (r=0.55). Functional disability indices were positively correlated (r=0.52–.54), whereas mental training was negatively correlated (r=−.35). Regression analysis identified pain intensity as strongest predictor (β=0.38, p<0.001), and model explained 54% variance (R^2=0.54).

Conclusion: Kinesiophobia in mobile esports players is strongly associated with pain, while mental training may represent a potential protective factor.

Keywords: Esports; Kinesiophobia; Pain; Mental training; Sport psychology.

Öz

Amaç: Bu çalışmada, kas-iskelet sistemi ağrısı bulunan mobil espor oyuncularında boyun ve üst ekstremite ağrısı, fonksiyonel yetersizlik, kinezyofobi ve zihinsel antrenman becerileri arasındaki ilişkilerin incelenmesi amaçlanmıştır.

Gereç ve Yöntem: Kesitsel tasarıma sahip bu çalışma Türkiye'de 210 mobil espor oyuncusu ile yürütülmüştür. Katılımcılar demografik bilgi formu, Boyun Özürlülük İndeksi, QuickDASH, Tampa Kinezyofobi Ölçeği ve Sporda Zihinsel Antrenman Envanteri'ni doldurmuştur. Normallik varsayımları doğrulandıktan sonra veriler Pearson korelasyon ve çoklu doğrusal regresyon analizleri ile değerlendirilmiştir**.**

Bulgular: Ağrı şiddeti ile kinezyofobi arasında anlamlı pozitif ilişki bulunmuştur (r=0.55). Fonksiyonel yetersizlik indeksleri de pozitif ilişkiler göstermiştir (r=0.52–0.54), zihinsel antrenman ise negatif ilişki göstermiştir (r=−0.35). Regresyon analizinde ağrı şiddeti en güçlü yordayıcıdır (β=0.38, p<0.001) ve model varyansın %54'ünü açıklamıştır (R^2=0.54).

Sonuç: Mobil espor oyuncularında kinezyofobi ağrı ile güçlü bir şekilde ilişkili görünmektedir ve zihinsel antrenman kinezyofobi için potansiyel bir koruyucu faktör olarak değerlendirilebilir.

Anahtar Kelimeler: Espor; Kinezyofobi; Ağrı; Zihinsel antrenman; Spor psikolojisi.

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Bu makale araştırma ve yayın etiğine uygun hazırlanmıştır.
intihal incelemesinden geçirilmiştir.

Introduction

In recent years, esports has rapidly evolved into a globally expanding performance domain with a competitive structure comparable to traditional sports. The fact that competitive video gaming now reaches millions of participants and spectators worldwide necessitates its examination not only within the entertainment industry but also in the fields of sport science, rehabilitation, and performance psychology. However the sedentary and repetitive nature of esports activities poses significant risks for musculoskeletal health. Indeed, a systematic review and meta-analysis published in 2026 reported that the one-year prevalence of pain among esports players reached up to 73%, with the most frequently affected regions being the spine (41%), neck (48%), and upper extremities (31%).[1] Similarly, a recent clinical study reported that 71.7% of esports players experienced musculoskeletal pain, with symptoms most commonly localized in the wrist, neck, and lower back regions.[2]

Similarly, studies conducted in different populations have demonstrated that a substantial proportion of esports players experience musculoskeletal problems. For instance, one study reported that approximately 60% of players experienced pain during gaming, most commonly in the spine and wrist.[3] Another investigation found that two-thirds of participants reported musculoskeletal injuries, with neck, shoulder, hand, and wrist pain being the most prevalent complaints.[4] In mobile device-based gaming, neck pain has been reported in nearly 40% of players, and stress has been identified as an important risk factor for chronic musculoskeletal pain.[5] These findings indicate that pain and functional impairments are common among esports players and highlight the necessity of investigating performance-related health parameters in this population.

Musculoskeletal pain is known to involve not only physiological but also psychological components. In this context, kinesiophobia is defined as an irrational fear that movement will increase pain or cause injury, and it represents an important psychological factor that may reduce athletic performance. It has been reported that kinesiophobia can influence both physical and psychological processes in athletes, and the Tampa Scale for Kinesiophobia is the most commonly used measurement tool in this field.[6] Clinical research indicates that increased levels of kinesiophobia are significantly linked to higher pain intensity and disability scores.[7] In individuals with chronic low back pain, kinesiophobia has also been found to correlate negatively with quality of life while showing a positive association with functional disability.[8]

The literature indicates that kinesiophobia is not limited to clinical populations but is also prevalent among individuals of different ages and activity levels. For example, a study conducted in geriatric individuals found that more than 70% of participants exhibited kinesiophobia, which was associated with mobility and balance.[9] Another study reported high kinesiophobia levels in approximately 69% of individuals with chronic mechanical low back pain, with significant associations observed with variables such as sex, educational level, pain, and disability.[10] These findings suggest that kinesiophobia is a multidimensional construct influenced by both biological and psychosocial factors.

It has long been recognized that sports performance depends not only on physical capacity but also on psychological skills. Research in sport psychology has demonstrated that mental training is an important psychological skill that enhances performance and exerts positive effects on various psychological processes.[11] One mental training technique, imagery, is defined as the mental visualization of movement without physical execution and is considered an effective method for motor learning and performance control.[12] These techniques have also been shown to produce significant effects on athletes' perception of challenge and performance psychology.[13] Furthermore, experimental studies have demonstrated measurable neurophysiological effects of motor imagery on postural control.[14]

Although the relationship between kinesiophobia and mental training is particularly important in the context of sports performance, most existing studies have

focused on clinical populations or traditional athletes. Despite evidence that pain prevalence is high among esports players and that factors such as gaming duration and experience are associated with pain, studies examining the relationship between kinesiophobia and mental strategies in this population remain limited.[15] This gap highlights the need for research that jointly addresses physical and psychological variables in esports players.

In this context, the present study aims to examine the relationship between neck and upper extremity pain and levels of kinesiophobia in mobile esports players, as well as to determine the role of mental training strategies in this relationship. The main hypotheses were as follows: H1: Pain intensity is positively associated with kinesiophobia. H2: Functional limitation level is positively associated with kinesiophobia. H3: Mental training skills are negatively associated with kinesiophobia. To the best of our knowledge, no previous study has simultaneously examined pain intensity, functional disability, kinesiophobia, and mental training skills within a single analytical model in mobile esports players. This study is expected to make an original contribution to the literature in terms of health management, performance psychology, and rehabilitation strategies for esports players.

Materials and Methods

Study design

This cross-sectional study examined the relationships among neck and upper extremity pain, kinesiophobia, and mental training strategies in mobile esports players using a quantitative correlational design.

Participants

A total of 210 volunteer participants aged 18–35 years who had been playing mobile esports for at least one year were included in the study. Of the participants, 54 were female and 156 were male (mean age: 27.01 ± 5.39 years).

To be eligible, participants were required to meet the following inclusion criteria: being between 18 and 35 years of age; playing mobile esports for at least one year; reporting neck and/or upper extremity pain associated with mobile esports participation (e.g., during or after gaming sessions, without a minimum duration requirement); and providing voluntary participation.

Exclusion criteria were a history of neurological disease, presence of rheumatic disease, or having undergone surgery within the past 12 months.

Participants were recruited through mobile esports communities, social media groups, and player forums using concurrent convenience and snowball sampling methods. Participants were primarily recreational mobile esports players who engaged in gaming individually through online platforms rather than as members of organized professional esports teams. All data were collected anonymously via an online survey system after obtaining electronic informed consent. Participants reported their primary mobile game genre, daily gaming duration, and years of gaming experience through the demographic questionnaire. These variables were used to characterize gaming behavior in the study sample.

Data collection instruments

A researcher-designed demographic information form was used to obtain data on age, sex, duration of gaming experience, daily gaming time, game genre, and duration of pain. Daily gaming duration was self-reported by participants and categorized into four groups: <1 hour, 1–3 hours, 4–6 hours, and ≥7 hours per day. Pain intensity was assessed using an 11-point Numeric Rating Scale (NRS), ranging from 0 (no pain) to 10 (worst imaginable pain). Participants were asked to rate their average pain experienced during or immediately after gaming sessions over the past week. Functional disability related to the neck region was assessed using the Neck Disability Index (NDI), a 10-item scale with total scores ranging from 0 to 50, where higher scores indicate greater functional impairment. The Turkish validity and reliability of the scale were established by Aslan et al.[16]. In the present sample, the NDI demonstrated high internal consistency (Cronbach's alpha=0.89).

Upper extremity functional status was evaluated using the Quick Disabilities of the Arm, Shoulder and Hand questionnaire (QuickDASH), a self-report instrument with scores ranging from 0 to 100, where higher scores indicate greater functional limitation; its Turkish validity and reliability were confirmed by Düger et al.[17]. The QuickDASH also showed high internal consistency (Cronbach's alpha= 0.91).

Fear of movement related to pain was assessed using the Tampa Scale for Kinesiophobia (TSK-11), which consists of 11 items with total scores ranging from 11 to 44, with higher scores indicating greater kinesiophobia levels. The Turkish version of the scale was validated by Yılmaz et al.[18]. The TSK-11 demonstrated good internal consistency (Cronbach's alpha=0.87).

Mental training strategies were evaluated using the Mental Training Inventory in Sports (MTIS), a multidimensional instrument assessing imagery, relaxation, self-talk, goal setting, emotion control, and concentration; its Turkish validity and reliability were established by Yarayan and İlhan[19]. The MTIS showed excellent internal consistency (Cronbach's alpha=0.93).

The primary dependent variable of the study was kinesiophobia, assessed using the TSK-11 total score. Pain intensity, neck disability, upper extremity disability, and mental training scores were treated as independent variables in the main analyses. In addition to the total MTIS score, subscale-level correlations were also examined to better characterize the relationship between specific mental training components and kinesiophobia.

Data collection procedure

Participants were recruited through online gaming communities and completed the study via an electronic survey system. After providing electronic informed consent, participants first completed the demographic information form, followed by the pain intensity rating, Neck Disability Index (NDI), Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH), Tampa Scale for Kinesiophobia (TSK-11), and Mental Training Inventory in Sports (MTIS), respectively. The survey required approximately 10–15 minutes to complete. All items were set as mandatory in the online system to minimize missing data. Responses were screened before analysis, and incomplete or ineligible submissions were excluded.

Ethics committee approval

The study was conducted with the approval of the Social and Human Sciences Ethics Committee of the relevant university (Decision No: 24, Date: 20 January 2026). All participants were informed that they could withdraw from the study at any time, and all procedures were carried out in accordance with the principles of the Declaration of Helsinki.

Statistical analysis

Statistical analyses were performed using IBM SPSS Statistics Software. Normality assumptions were evaluated using skewness–kurtosis values and histogram inspection, with values between −1.5 and +1.5 considered indicative of normal distribution. Relationships between variables were examined using Pearson correlation coefficients, and multiple linear regression analysis was conducted to identify predictors of kinesiophobia. Additional Pearson correlation analyses were conducted to examine the relationships between the subscales of the Mental Training Inventory and kinesiophobia.

Group differences according to daily gaming duration were analyzed using one-way analysis of variance (ANOVA), and Tukey HSD post-hoc tests were applied to identify pairwise group differences when significant effects were observed. Regression assumptions were assessed using the Durbin–Watson statistic for residual independence, and variance inflation factor (VIF) and tolerance values for multicollinearity. Effect sizes for group comparisons were reported using Cohen's d and partial eta squared (η^2p). Statistical significance was set at $p<.05$. Ninety-five percent confidence intervals (95% CI) were also calculated.

Results

A total of 210 participants were included in the study. The mean age was 27.01 ± 5.39

years. Descriptive statistics for pain intensity, disability indices, kinesiophobia, and mental training scores are presented in Table 1.

Table 1. Descriptive statistics of study variables.

Variable	Mean	SD	Min	Max
Age (years)	27.01	5.39	18	35
Pain Intensity	5.55	1.91	1	10
Neck Disability Index	21.00	9.34	0	50
QuickDASH	27.83	15.01	0	76
Tampa Scale for Kinesiophobia	26.49	6.02	11	41
Mental Training Inventory in Sports	49.70	6.32	33	66

SD: Standard deviation.

Sex-based comparisons showed a statistically significant difference only for pain intensity (t=2.27, $p<0.05$). No significant differences were found between female and male participants for the remaining variables ($p>0.05$) (Table 2).

Table 2. Comparison of variables by sex.

Variable	Female (Mean ± SD)	Male (Mean ± SD)	t	*p*	Cohen's d
Pain Intensity	6.04 ± 1.78	5.38 ± 1.94	2.27	0.026	0.34
Neck Disability Index	20.72 ± 8.11	21.10 ± 9.76	−0.28	0.783	0.04
QuickDASH	28.31 ± 14.65	27.67 ± 15.18	0.27	0.784	0.03
Tampa Scale for Kinesiophobia	27.28 ± 5.68	26.22 ± 6.14	1.16	0.250	0.18
Mental Training Inventory in Sports	49.63 ± 6.26	49.74 ± 6.37	−0.11	0.914	0.01

Independent samples t-test.

Correlation analysis showed significant positive correlations between pain intensity, disability indices, and kinesiophobia (r=0.52–0.55, $p<0.001$). Several subscales of the Mental Training Inventory were negatively correlated with kinesiophobia, including relaxation, goal setting, self-talk, emotion control, and concentration (r=−.16 to −.30, $p<0.05$), while imagery was not significantly associated with kinesiophobia ($p>0.05$) (Table 3).

Table 3. Correlation analysis among variables.

Variable	Pain	NDI	QuickDASH	TSK-11
Pain	1	.45***	.42***	.55***
NDI	.45***	1	.48***	.54***
QuickDASH	.42***	.48***	1	.52***
TSK-11	.55***	.54***	.52***	1
MTIS	−.25***	−.28***	−.30***	−.35***
Imagery	−.07	−.09	−.11	−.07
Relaxation	−.21**	−.24***	−.26***	−.30***
Self-talk	−.18**	−.20**	−.23***	−.25***
Goal setting	−.20**	−.22***	−.25***	−.30***
Emotion control	−.15*	−.17*	−.18**	−.19**
Concentration	−.13	−.14*	−.16*	−.16*

Pearson correlation analysis. *** $p<0.001$, ** $p< 0.01$, * $p<0.05$

Multiple regression analysis indicated that the model significantly predicted kinesiophobia ($F(4, 205) = 60.15$, $p<0.001$, $R^2=0.54$). Pain intensity, NDI, QuickDASH, and mental training were significant predictors (Table 4).

Kinesiophobia scores differed significantly across daily gaming duration groups ($F(3, 206)=19.00$, $p<0.001$). Post-hoc Tukey analysis indicated that participants who played less than 1 hour per day had significantly lower kinesiophobia scores compared with the other gaming duration groups, while no significant difference was observed between the 4–6 hours and ≥7 hours groups (Table 5).

Table 4. Multiple linear regression analysis of variables associated with kinesiophobia.

Predictor	B	β	t	*p*	Tolerance	VIF
Constant	17.14	—	7.89	<0.001	—	—
Pain Intensity	1.52	.38	10.20	<0.001	.55	1.82
Neck Disability Index	0.15	.19	4.91	<0.001	.55	1.82
QuickDASH	0.09	.18	5.05	<0.001	.57	1.75
Mental Training	−0.10	−.10	−2.65	.009	.83	1.21

Multiple linear regression analysis.

Table 5. Comparison of kinesiophobia scores across daily gaming duration groups.

Daily Gaming Duration	n	Mean ± SD
< 1 hour	22	20.32 ± 5.24
1–3 hours	89	25.17 ± 5.57
4–6 hours	64	28.91 ± 4.66
≥ 7 hours	35	29.31 ± 6.12

ANOVA: $F(3, 206)=19.00$, $p<0.001$, Post-hoc: Tukey HSD test.

Discussion

The present study indicates that pain intensity was the strongest predictor of kinesiophobia in mobile esports players, suggesting that fear of movement in this population may be influenced by cognitive interpretations of pain rather than demographic factors alone.

Epidemiological evidence consistently indicates that musculoskeletal complaints are highly prevalent among esports players, and the present findings further suggest that pain may be associated not only with physical symptoms but also with psychological responses related to fear of movement.[1,3,4-5]

Repetitive micro-movements and sustained static postures characteristic of mobile gaming may contribute to localized muscle fatigue and nociceptive signaling. An alternative interpretation is that individuals with higher fear of movement may perceive pain as more intense, suggesting the possibility of bidirectional relationships between these variables.

In addition, postural characteristics may vary depending on the type of mobile device used during gaming. Smartphone gaming often requires greater neck flexion angles due to the smaller screen size and closer viewing distance, which may increase mechanical loading on the cervical spine. In contrast, tablet use may allow a slightly more neutral head position but can increase upper extremity loading due to the greater device weight and the need to maintain prolonged arm elevation. These device-specific postural characteristics may contribute to the development of neck and upper extremity discomfort among mobile esports players.

The strong association between pain and kinesiophobia observed in this study aligns with the fear-avoidance model, which posits that individuals who interpret pain as threatening are more likely to develop avoidance behaviors that subsequently increase disability.[20-21] Evidence from athletic populations similarly suggests that post-injury fear of movement may influence performance and rehabilitation outcomes.[6] Clinical findings showing positive relationships between kinesiophobia, pain intensity, and disability further support this interpretation.[22-23,7-8] Together, these findings suggest that fear-related cognitive mechanisms may represent a shared pathway linking pain and functional limitation across both clinical and performance-based populations.

The strong relationships identified between functional disability indices and kinesiophobia provide additional support for a biopsychosocial framework. Functional limitation may not merely reflect structural impairment but may also reinforce beliefs about bodily vulnerability. Established functional measures such as the Neck Disability Index and QuickDASH have previously been shown to correlate with daily activity performance and upper extremity function, suggesting that functional difficulty may serve as behavioral confirmation of perceived movement risk.[24-25,16-17] Research in sports injury populations likewise indicates that fear of movement increases as functional

impairment worsens.[26-27] Accordingly, disability and fear may operate within a reciprocal feedback loop in which physical discomfort reinforces cognitive threat beliefs, which in turn promote avoidance behavior.

One of the most notable findings of this study is the negative association between mental training skills and kinesiophobia. Extensive research in sport psychology indicates that mental training techniques enhance performance and psychological regulation.[11-12,28-30] Mental skills have also been shown to influence challenge perception and emotional responses in athletes, while mental toughness predicts anxiety and performance outcomes in elite performers.[13,31-32] Collectively, these findings suggest that mental training may facilitate adaptive interpretation of bodily sensations and reduce fear-related responses. Accordingly, mental training may be associated not only with performance enhancement but also with greater psychological resilience against pain-related fear.

Neurophysiological evidence may provide a possible explanatory framework for this relationship. Motor imagery has been shown to activate neural circuits similar to those involved in actual movement execution, and experimental studies demonstrate measurable effects of imagery tasks on postural control.[14, 33-34] In addition, physiological monitoring research indicates that autonomic nervous system responses during competitive gaming vary according to performance context.[35] These findings imply that mental training may modulate both cognitive appraisal systems and physiological arousal responses, thereby influencing fear perception.

The observed increase in kinesiophobia with longer gaming duration is consistent with exposure-based risk models. Evidence from professional esports populations shows that players with higher weekly gaming volumes are substantially more likely to report physical symptoms.[36] Prolonged static posture has also been associated with muscle fatigue, chronic pain, and muscle tension, while extended screen exposure is linked to increased pain frequency.[37-38] These converging findings suggest that duration of play may function as a cumulative load variable influencing both physiological strain and psychological responses. However, because of the cross-sectional design, causality cannot be inferred, and it remains unclear whether longer gaming duration increases kinesiophobia or individuals with higher kinesiophobia engage in longer gaming behavior.

Although some studies suggest that musculoskeletal risk may be lower in esports players than in traditional athletes, this does not imply absence of risk. In fact, esports players may accumulate higher weekly training volumes than athletes in certain conventional sports.[39] The coexistence of relatively low acute injury rates with high exposure durations therefore suggests distinct risk pathways in esports. In particular, static loading and repetitive micro-movements may represent primary mechanisms underlying chronic pain development.[40-41] This interpretation supports the argument that injury risk in esports may be better conceptualized within cumulative load frameworks rather than acute trauma models.

The limited sex differences observed in the present study are consistent with heterogeneous findings in previous literature. Some studies report higher pain prevalence among female players, whereas others suggest that sex is not a determining factor.[22-23,42] This variability indicates that kinesiophobia may be more strongly influenced by cognitive and behavioral mechanisms than by demographic characteristics.

From an applied perspective, these findings underscore the importance of multidisciplinary intervention strategies. Psychological responses have long been recognized as key determinants of rehabilitation outcomes in athletes, and recent evidence suggests that integrated health management approaches are more effective for athlete well-being.[37,43-44] Accordingly, interventions designed for mobile esports players may benefit from combining ergonomic optimization, structured rest intervals, physical conditioning, and psychological skills training. Such integrative approaches are may be particularly effective because they simultaneously target

physiological load, cognitive appraisal, and emotional regulation processes.

From a practical perspective, these findings suggest that coaches and rehabilitation specialists working with mobile esports players should pay attention to ergonomic posture, gaming duration, and psychological factors. Postural education, regular rest breaks, and strengthening exercises targeting the neck and upper extremity may help reduce musculoskeletal strain. In addition, mental training techniques such as imagery and relaxation may help reduce fear of movement and support psychological resilience in esports athletes.

Overall, the present results support a multidimensional explanatory framework in which physical symptoms, cognitive processes, and behavioral exposure jointly shape kinesiophobia in mobile esports players. Rather than representing a simple consequence of pain, fear of movement may be related to the combined influence of biomechanical strain, psychological interpretation, and behavioral habits. Understanding these interactions may facilitate development of evidence-based prevention and rehabilitation strategies tailored specifically to digital athletes. These findings highlight the importance of integrating psychological assessment into routine health monitoring protocols for esports athletes.

Future studies may benefit from incorporating objective biomechanical and physiological measurements such as postural analysis, electromyography, and motion tracking technologies. These approaches may provide a more detailed understanding of muscle activation patterns, postural loading, and movement behaviors during mobile gaming. Integrating objective measurements with psychological assessments may help clarify the mechanisms underlying the relationship between pain, kinesiophobia, and performance-related behaviors in esports players.

Conclusion

In conclusion, kinesiophobia in mobile esports players appears to be a multidimensional phenomenon associated with both physical factors, such as pain intensity and functional disability, and psychological factors, including mental training skills. Pain intensity emerged as the strongest predictor, highlighting the importance of physical symptom management in this population. At the same time, the negative association between mental training and kinesiophobia suggests that mental training may represent a relevant psychological factor associated with lower kinesiophobia. These findings suggest that integrated biopsychosocial approaches may be worth considering in the health management of esports athletes. Future longitudinal studies using objective assessments are needed to clarify causal pathways.

Limitations

This study has several limitations that should be considered. First, data were collected through an online survey, which prevented direct observation of participants' posture, device use, and gaming environment. Therefore, biomechanical factors such as neck posture and upper extremity loading could not be objectively assessed.

In addition, the use of convenience and snowball sampling may have introduced sampling bias, and certain subgroups of esports players may be underrepresented. Accordingly, the generalizability of the findings should be interpreted with caution.

Furthermore, self-reported data could not be independently verified, and contextual factors such as gaming patterns, rest intervals, and ergonomic conditions were not controlled.

Finally, due to the cross-sectional design, causal relationships cannot be established. Future longitudinal studies using objective biomechanical and physiological measurements are needed to clarify the underlying mechanisms.

Ethics Committee Approval

The study was approved by the Social and Human Sciences Ethics Committee of the relevant university (Decision No: 24, Date: 20 January 2026). All participants were informed that they could withdraw from the study at any time, and all procedures were carried out in

accordance with the principles of the Declaration of Helsinki.

Informed Consent

Informed consent was obtained electronically from all participants prior to data collection. Participants were informed about the purpose of the study, voluntary participation, confidentiality, and their right to withdraw at any time.

Author Contributions

Concept/Idea: E.B., A.D.; Design and Planning:E.B.,A.D.;Supervision/Consultancy: E.B.; Resources: E.B.; Materials: E.B.; Data Collection and/or Processing: E.B.; Analysis and/or Interpretation: E.B., A.D.; Literature Review: E.B., A.D.; Writing: E.B.; Critical Review: A.D.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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Peer-review

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