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THE 6th INTERNATIONAL AGRONURSING CONFERENCE
In Conjunction With 2nd International Post Graduate Nursing Student Conference (IPGNSSC)

PROCEEDING

**INNOVATING NURSING IN THE DIGITAL AGE :
ENHANCING EDUCATION, RESEARCH, AND
PRACTICE** □□□□□□



July, 30th - 31th
2025



Faculty of Nursing
Universitas Jember

UNEJ

WORKING IN HARMONY, NURTURING THE FUTURE



UNIVERSITAS JEMBER



**6Th International AgroNursing Conference in Conjunction
with 1st International Post Graduate Nursing Student
Conference (2nd IPGNSC) 2025
“Innovating Nursing in the Digital Age: Enhancing Education,
Research, and Practice”**

Jember, July 30th – 31th, 2025

PROCEEDING

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FACULTY OF NURSING

UNIVERSITAS JEMBER

GREETING MESSAGE

Bismillahirrohmanirrohim
Assalamualaikum Wr Wb
Good morning and best wishes

The Honorable Rector of the Universitas Jember
The Honorable Dean, School of Nursing, Universitas Jember
The Honorable, All Speakers of the International Nursing Conference
The Honorable Guests
The Honorable Conference Committee
Dear All, All Participants of the conference

Thank God we praise the presence of Allah SWT, because of the blessing and grace, we all can be present in this place, to attend the International AgroNursing Conference. In Conjunction with the Second International Post Graduate Nursing Student Conference, Salawat and greetings may still be delegated to the Great Prophet Muhammad SAW.

Ladies and Gentlemen,
At the beginning of this speech, I would like to say welcome to the sixth international nursing conference, In Conjunction with the second International Post Graduate Nursing Student Conference, with the theme " Innovating Nursing in the Digital Age: Enhancing Education, Research, and Practice".

Innovating nursing in the digital age means transforming how nurses learn, conduct research, and deliver care by harnessing the power of technology. Digital tools and innovations—such as telehealth, electronic health records, artificial intelligence, and mobile applications—are reshaping nursing education, expanding research opportunities, and improving nursing practice.

In education, digital platforms, virtual simulations, and online learning environments equip nurses and students with up-to-date knowledge and practical skills anytime, anywhere. In research, big data analytics and digital collaboration tools help nurses generate evidence that informs best practices and policy. In practice, technology supports nurses in delivering patient-centered, efficient, and high-quality care while enabling better communication and coordination among healthcare teams.

By embracing innovation, nursing professionals can enhance patient outcomes, advance their own competencies, and lead improvements in the healthcare system. Bridging theory and practice through digital innovation empowers nurses to stay adaptive, evidence-based, and responsive to the evolving needs of society. What are the most effective ways to innovate nursing in the digital age to enhance education, research, and practice while bridging theory and practice?

To answer that question, then for the next two days, starting from today on 30-31 July 2025 at the Auditorium of Universitas Jember, we will discuss the Innovating Nursing in the Digital Age: Enhancing Education, Research, and Practice with speakers from 5 countries, namely:

1. Prof. Caleb Ferguson (Australia).
2. Dr. Supavadee Thiengtham (Thailand)
3. Dr. Chew Han Shi, Jocelyn (Singapore)
4. Assoc. Dr. Muhammad Kamil Bin Che Hasan (Malaysia)
5. Prof. Lin, Mei-Feng (Taiwan)
6. Ns. Ahmad Rifai, M.S, PhD. (Indonesia)

Ladies and Gentlemen

This conference is attended by students, health department delegates, academics, hospital and community clinic practitioners with a total of 1.000 participants.

This event can be held because of the support and efforts of all parties. Therefore, I would like to thank the Rector of Universitas Jember, Head of School of Nursing- University of Jember, Indonesian National Nurses Association (INNA) or PPNI, Auditorium of Universitas Jember, and all the committees who have worked hard to carry out this activity. I also thank the sponsors who have worked with us so that this event runs as expected. Amen.

We, as the committee, apologize if there is any inconvenience during this event. Our hope is that this activity can increase our knowledge, which benefits all of us. Amen.

Before I end my speech, I want to say "when we interpret that today is an ordinary day, then we will come out of this room as ordinary people, but when we interpret that today is a very extraordinary day, then we will come out of this room as a very wonderful person ".

Finally, please enjoy this conference, May Allah SWT always give blessings to all of us. Amen

Wassalamualaikum Wr. Wb.

Dean, Faculty of Nursing Universitas Jember

Dr. Ns. Rondhianto, M.Kep.

UPT Perpustakaan Universitas Jember

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Committee

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Amin Aini Ma'rufah, S.Kep.
Edy Junaidi





RUNDOWN ORAL PRESENTATION (30th July 2025)

6th International Agnursing Conference (6th IANC) In Conjunction with 2nd International Post Graduate Nursing Student Conference (2nd IPGNSC) 2025

Room 1 (Main Hall)					
Number	Time	Name	Country	Manuscript Title	Notes
1.	13.00 – 13.10	Wan Hasliza Wan Mamat & Herlina Hazin	Malaysia	Challenges Faced by Malaysian Nurses Working Abroad: A Qualitative Study	6 minutes presentation, 3 minutes Q&A, and 1 minute participant movement. Moderator: Ns. Rismawan Adi Yunanto, S.Kep., M.Kep. MoM + Time Keeper + Operator: Safira Zahra Zakia
2.	13.10 – 13.20	Thi Thu Huong Phan, Tien Trong Nghia Hoang, Thi Thu Huong Duong, Le Phi Nguyen Nguyen	Vietnam	The Association Between Caregiver Burden and Behavioral and Psychiatric Disorders in Dementia Patients	
3.	13.20 – 13.30	Apriyadno Jose Al Freadman Koa	Taiwan	Application of Telehealth in Physical Activity Programs among Nurses in Clinical Settings: A Scoping Review	
4.	13.30 – 13.40	Ruris Haristiani, Rondhianto, Rismawan Adi Yunanto, Baskoro Setioputro, Azkiatulfikroh, Trisya Ainur Alula, Laily Nailul Farih	Indonesia	Diameter And Macroscopic Evaluation of Burns in Rats (Rattus Norvegicus) with First Aid of Room Temperature Water, Cold Water, Normal Saline, and Aloe Vera	
5.	13.40 – 13.50	Wardatus Sholihah, Nurbetti br Ginting	Indonesia	Effectiveness of Ice Gel in Reducing Pain Scale During Venipuncture in Pediatric Patients	
6.	13.50 – 14.00	Eka Sastrio Rohikim	Indonesia	Case Study of Prep (Pre-Exposure Prophylaxis) Implementation among Female Sex Workers	
7.	14.00 – 14.10	Assoc. Prof. Dr. Azlina Daud	Malaysia	The Use of Infrared Thermometer in Identifying Extravasation During	



				Intravenous Chemotherapy Infusion in Cancer Patients: Study Protocol for An Observational Study	
8.	14.10 – 14.20	Riris Chintya Helieniastut	Indonesia	Overview Of the Percived Usefulness and Ease of Use of the Sicare Applcation as an Educational Media on Chronic Energy Deficiency	
9.	14.20 – 14.30	Retno Tri Astuti Ramadhana	Indonesia	Publication Trends on Cardiopulmonary Resuscitation Performed by Laypersons In Cardiac Arrest Patients: A Bibliometric Analysis From 1979-2025	
10.	14.30 – 14.40	Desy Listyaningrum, Sri Setiyarini, Rafi Achmad Rukhama	Indonesia	Patient-Nurse Reliability of the Indonesian Version of the Richard-Campbell Sleep Questionnaire	



RUNDOWN ORAL PRESENTATION

6th International Agnursing Conference (6th IANC) In Conjunction with 2nd International Post Graduate Nursing Student Conference (2nd IPGNSC) 2025

Room 5 (Auditorium)					
Number	Time	Name	Country	Manuscript Title	Notes
1.	13.00 – 13.10	Apriana Rahmawati, Martika Hijriani, Aan Sutandi, Harizza Pertiwi	Indonesia	Treatment Adherence and Access to Health Services in Relation to MDR-TB Cases	6 minutes presentation, 3 minutes Q&A, and 1 minute participant movement. Moderator: Ns. Ana Nistiandani, S.Kep., M.Kep. MoM Time Keeper + Operator: Alifia Afriza Putri
2.	13.10 – 13.20	Jernih Hati Telambanua, Anggrayeni Purba	Indonesia	Application of Benson Relaxation Technique to Reduce Pain in Post Sectio Caesarea: Case Study	
3.	13.20 – 13.30	Siswoyo, Ana Nistiandani, Maulana Thoriq Aziz	Indonesia	Relationship Between Near Work Activities and the Degree of Myopia in Adolescents at RSD Dr. Soebandi Jember	
4.	13.30 – 13.40	Suhendra Agung Wibowo, Ifa Nofalia	Indonesia	The Influence of Sociodemographic Factors on Stress Levels among Pulmonary Tuberculosis Patients in Jombang: A Health Belief Model-Based Study	
5.	13.40 – 13.50	Shidqiyyah Binti Abd. Hamid, Irdina Ridwah Ahmad Hanafi	Malaysia	Disposal Of Expired and Unused Medications: Knowledge and Practices Among Undergraduate Students in Kuantan, Malaysia.	
6.	13.50 – 14.00	Tri Wahyuni, Gita Maya Sari	Indonesia	The Effect of Lavender Aromatherapy to Improve Sleep Quality CKD Undergoing Hemodialysis	



7.	14.00 – 14.10	Fatimah Zahra, Esa Rosyida, Nadia Rohmatul Laili	Indonesia	The Role of Self-Efficacy in Promoting Self-Care Behavior and Blood Pressure Control Among Hypertensive Patients: A Cross-Sectional Study in Rural Indonesia
8.	14.10 – 14.20	Nurul Fahmi Rizka Laily, Dimas Hadi Prayoga, Mareta Deka Paraswati, Suhendra Agung Wibowo	Indonesia	Relationship Between Age and Injury Mechanism to <i>Outcome</i> in Head Injury in Ngudi Waluyo Wlingi Hospital
9.	14.20 – 14.30	Lantin Sulistyorini, Annis Catur Adi, Yuni Sufyanti Arief	Indonesia	Nurse-Led Interventions in Preventing Overweight among Preschool Children: A Narrative Review



RUNDOWN ORAL PRESENTATION

6th International Agnursing Conference (6th IANC) In Conjunction with 2nd International Post Graduate Nursing Student Conference (2nd IPGNSC) 2025

Room 15 (Faculty of Nursing)					
Number	Time	Name	Country	Manuscript Title	Notes
1.	13.00 – 13.10	Nurul Arifah	Indonesia	A Literature Review of The Benefits and Risk of ChatGPT among Nursing Students	6 minutes presentation, 3 minutes Q&A, and 1 minute participant movement. Moderator: Ns. Rizeki Dwi Fibriansari, S.Kep, M.Kep MoM + Time Keeper + Operator: Rianti Yulia Kusuma Ayu
2.	13.10 – 13.20	Dewi Ulfah Ardiani, Dodi Wijaya, Iis Rahmawati	Indonesia	Integration Of Technology In Clinical Decision-Making: Opportunities and Challenges In Digital Health Systems	
3.	13.20 – 13.30	Annisa Pratiwi	Indonesia	Acceptance and Use of Artificial Teligence (AI) Among Nursing Students: A Scoping Review	
4.	13.30 – 13.40	Sari Dewi Karuniawathy, Nurfika Asmaningrum, Iis Rahmawati	Indonesia	Instruments Measuring Nursing Care Responsiveness: A Systematic Review	
5.	13.40 – 13.50	Supiah Farida, Muhamad Zulfatul A'la, Rondhianto	Indonesia	The Differences In The Experiences Of Male and Female Nurses In End-Of-Life Care In The ICU: A Scoping Review	
6.	13.50 – 14.00	Syamsidar, Nurfika Asmaningrum, Rondhianto	Indonesia	Implementation Of Calista Roy's Adaptation Implementation Model In Health Care Settings: A Scoping Review	
7.	14.00 – 14.10	Ari Kustiarini, Rondhianto,	Indonesia	Unraveling The Impact Of Service Reliability On Patient	



		Muhamad Zulfatul A'la		Satisfaction In Hospitals: A Scoping Review	
8.	14.10 – 14.20	Sri Wahyuningsih, Muhamad Zulfatul A'la, Dodi Wijaya	Indonesia	Factors Influencing Safety Culture Among Nurses: A Scoping Review	



TIMETABLE

6th International Agronursing Conference (6th IANC) in conjunction with The 2nd International Post Graduate Nursing Student Conference (2nd IPGNSC)
Jember, July 30-31th, 2025

FIRST DAY (07.00 – 16.00)

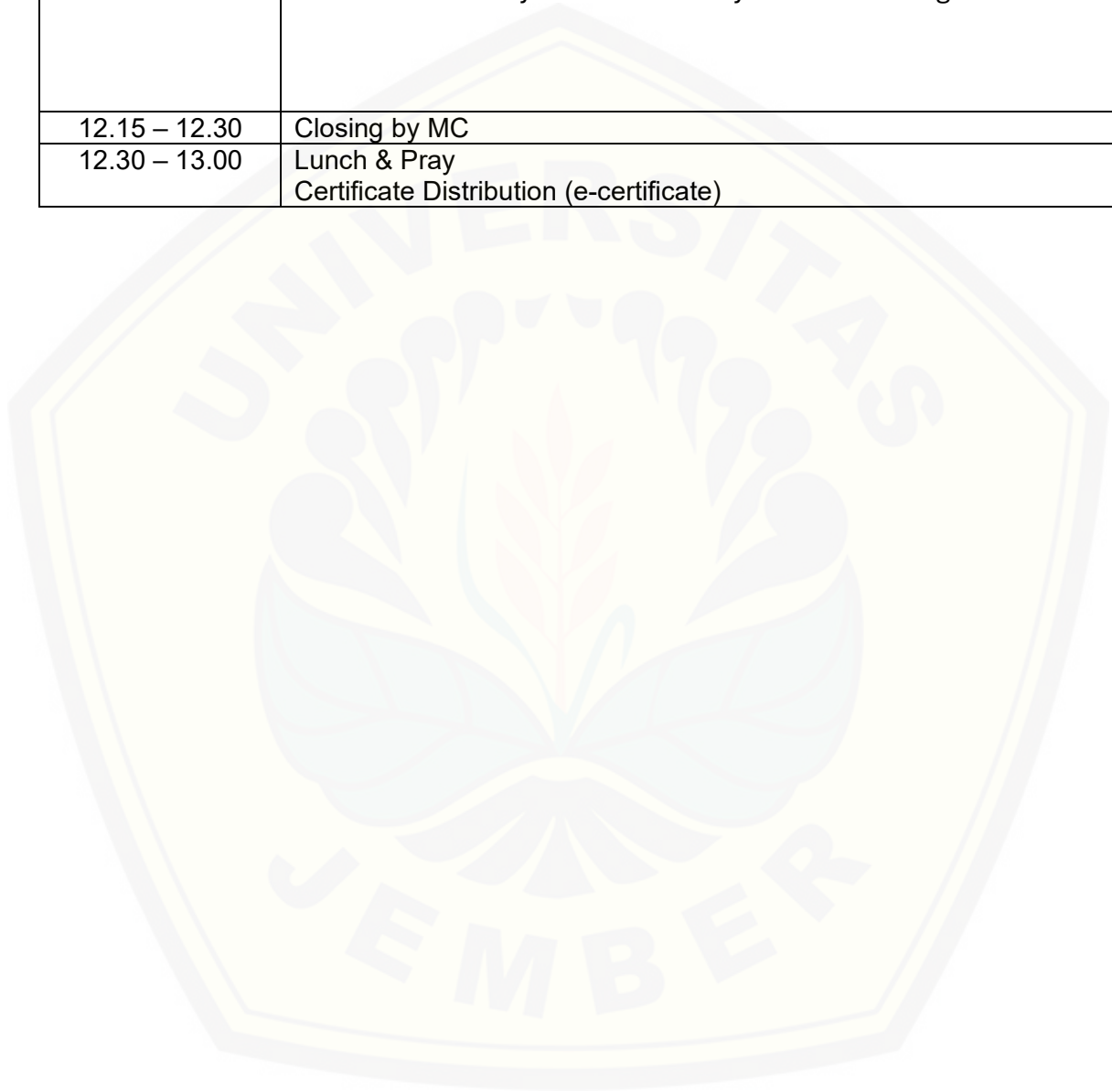
Time (WIB) GMT + 7	Agenda
REGISTRATION	
07.00 – 08.00	Registration
OPENING CEREMONY AND KEYNOTE SPEAKER	
08.00 – 08.05	Opening by MC
08.05 – 08.10	Reog Ponorogo
08.10 – 08.15	Indonesia Raya National Anthem Universitas Jember Mars Faculty of Nursing Universitas Jember Mars
08.15 – 08.20	Report Speech Ns. Muhamad Zulfatul A'la S.Kep., M.Kep., PhD. (The Chairman Committee)
08.20 – 08.30	Welcome Speech Dr. Rondhianto, S.Kep.,Ns., M.Kep. (Dean Faculty of Nursing, Universitas Jember, Indonesia)
08.30 – 08.40	Welcome Speech and Opening Dr. Ir. Iwan Taruna, M.Eng., IPU (Rector Universitas Jember, Indonesia)
08.40 – 08.45	Opening Remark by Rector Universitas Jember, Indonesia
08.45 – 08.50	TTD MoA (Malaysia)
08.50 – 09.00	Coffee Break
PLENARY SESSION I	
09.00 – 10.00	PLENARY I (Offline) -- (45 + 15 mins Q&A) SPEAKER I Prof. Caleb Ferguson <i>Building Research Capacity in Frailty Care with Digital Innovation</i>
10.00 – 11.00	PLENARY I (Offline) -- (45 + 15 mins Q&A) SPEAKER II Dr. Muhammad Kamil Bin Che Hasan

	<i>Revolutionizing Nursing Care for Community-Dwelling Older Adults with Musculoskeletal Conditions: Harnessing IoT and Digital Innovations</i>
PLENARY SEASON II	
11.00 – 12.00	<i>PLENARY II (Online) -- (45 + 15 mins Q&A)</i> SPEAKER III Dr. Supavadee Thiengtham <i>Innovative Technologies Transforming Nursing Care</i>
12.00 – 13.00 Launch & Pray	
13.00 – 15.00 (10 mins/ presenters)	ORAL PRESENTATION <i>7-10 presenters/room (124 presenters/15 rooms)</i>
14.00 – 14.30	Coffee Break

SECOND DAY (07.00 – 13.00)

Time (WIB) GMT + 7	Agenda
REGISTRATION	
07.00 – 08.00	Registration (Snack Include)
PLENARY SESSION III	
08.00 – 09.00	<i>PLENARY III (Online) -- (45 + 15 mins Q&A)</i> SPEAKER IV Dr. CHEW Han Shi, Jocelyn <i>Reinventing the Frontlines: Transformative Tech and the Future of Professional Nursing Practice</i> <i>PLENARY III (Offline) -- (45 + 15 mins Q&A)</i>
09.00 – 10.00	<i>PLENARY III (Offline) -- (45 + 15 mins Q&A)</i> SPEAKER V Prof. Lin, Mei-Feng <i>Digital Innovation for People with Chronic illness: Music & Depression detection</i>
10.00 – 10.15	<i>Coffee Break (Conditional)</i>
10.00 – 11.00	<i>PLENARY III (Offline) -- (45 + 15 mins Q&A)</i> SPEAKER VI Ns. Ahmad Rifai, M.S., PhD. <i>Bridging Care and Technology: Developing Nurse Competencies for EHR-Enabled Healthcare System</i>

CLOSING STATEMENT	
11.00 – 12.00	Announcement: 1. Best Presenter 2. Best Performance 3. Best Article Noted : - Followed by door prizes from sponsors (conditional) - Followed by IANC 6th activity video screening
12.15 – 12.30	Closing by MC
12.30 – 13.00	Lunch & Pray Certificate Distribution (e-certificate)





RELATIONSHIP BETWEEN NEAR WORK ACTIVITIES AND THE DEGREE OF MYOPIA IN ADOLESCENTS AT RSD DR. SOEBANDI JEMBER

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ABSTRACT

Myopia is a visual impairment characterized by difficulty seeing distant objects due to light focusing in front of the retina. The global prevalence of myopia continues to increase and is expected to reach 49.8% by 2050. One of the main risk factors for myopia is near work activities, such as reading, using gadgets, and working with computers for a long time. This study aims to evaluate the relationship between near work activities and the degree of myopia in adolescents at Dr. Soebandi Jember Hospital. This study used a descriptive analytic correlational method with a cross-sectional approach. The study sample consisted of adolescents with myopia who were selected using total sampling technique. Data were collected through a near work activity questionnaire and patient medical records, then analyzed using the Kendall Tau test. The results showed a significant relationship between near work activities and the degree of myopia (p value = 0.020; correlation coefficient = 0.264). In addition, there was a significant relationship between the length of time reading books (p = 0.025), smartphone/tablet use (p = 0.005), laptop/computer use (p = 0.036), and watching television (p = 0.042) with the degree of myopia in adolescents. The conclusion of this study is that there is a significant relationship between near work activities and the degree of myopia in adolescents at RSD dr. Soebandi Jember.

Keywords: *Myopia; Near Work; Degree of Myopia; Adolescents*

Background

Myopia is a visual disorder where individuals experience difficulty seeing distant objects clearly. It is categorized as a serious non-communicable disease, with incidence rates rising annually across the globe. People with myopia can still see objects at a close distance clearly. This condition occurs when incoming

light focuses in front of the retina, resulting in blurred vision for distant objects (National Eye Institute, 2023). Near work activities, such as reading or prolonged use of computers, force the eyes to continuously accommodate, which can lead to axial elongation of the eyeball and, consequently, blurred distance vision (Saminan, 2013).

According to WHO data in 2020, approximately 2.6 billion people of all ages were estimated to have myopia, with 312 million of them under the age of 19 in 2015 (WHO, 2019). Projections estimate that by 2050, 49.8% of the global population will be affected by myopia, with high myopia prevalence reaching 9.8% (Holden et al., 2016). In Indonesia, the prevalence of refractive errors is about 25% of the population, affecting an estimated 55 million people. Around 10% of the 66 million school-aged children in Indonesia are affected by refractive errors (RG FK UNS, 2020). A study by Oneta et al. (2023) of 384 students found that 64.58% had mild myopia, 27.87% moderate, and 7.55% severe. A preliminary study at RSD dr. Soebandi Jember reported 50 cases of adolescent myopia in 2023.

Students from elementary to high school levels are constantly exposed to near work activities for both learning and recreational purposes (Efendi, 2021). Near work is a well-established risk factor for the development of myopia, while outdoor activity is considered a strong protective factor. In the millennial era, outdoor physical activity is increasingly rare, while near work has become a daily norm (Gunardi et al., 2020). Delayed accommodation during near work has been linked to the onset and progression of myopia. It has been shown that significant accommodative lag is present before the onset of myopia and that emmetropic children who develop myopia demonstrate greater

accommodative lag than those who remain emmetropic. This lag causes hyperopic defocus, which contributes to axial elongation of the eyeball and myopia progression (Gammoh, 2018). These facts and phenomena have inspired the researchers to study the relationship between near work and the degree of myopia in adolescents at RSD dr. Soebandi Jember.

Methods

This study employed a descriptive-analytic correlational design with a cross-sectional approach to examine the relationship between near work and the degree of myopia in adolescents. The study population consisted of adolescent patients with myopia attending the Ophthalmology Clinic at RSD dr. Soebandi Jember, selected using a total sampling technique. The study was conducted using medical record data from RSD dr. Soebandi Jember. The data collection period spanned from December 2024 to January 2025. Data were collected from two sources: secondary data from medical records and primary data from a near work activity questionnaire. Univariate analysis was used to describe frequency distributions, while bivariate analysis using Kendall's Tau-b and Tau-c tests was conducted to assess the relationships between variables. This research adhered to ethical principles, including obtaining informed consent, maintaining data confidentiality, and providing benefits such as increasing participants' awareness of the impact of near work on myopia.

Results

Tabel 1. Characteristics of Adolescents with Myopia

Respondent Characteristics	Median	Min.	Max	Frequency	Percentage
Age (years)	14	10	18		
Gender					
Male				15	45,5
Female				18	54,5
Degree of Myopia					
Mild				15	45,5
Moderate				10	30,3
Severe				8	24,2
Parental History of Myopia					
Yes				19	57,6
No				14	42,4
Outdoor Activity Duration					
Often (12–16 hrs/week)				3	9,1
Sometimes (7–11 hrs)				19	57,6
Rarely (2–6 hrs)				11	33,3
Never (≤ 1 hr)				0	0,00



Table 1 shows that the median age of adolescents with myopia at RSD dr. Soebandi Jember was 14 years. Myopia was more prevalent among females (54.5%) than males (45.5%). Of the respondents, 45.5% had mild myopia, 30.3% moderate, and 24.2% severe. A parental history of myopia was reported by 57.6% of the participants. Regarding outdoor activities, the majority of respondents engaged in outdoor activities for 7–11 hours per week (57.6%), followed by 2–6 hours (33.3%), and 12–16 hours (9.1%).

Tabel 2. Relationship Between Near Work and Degree of Myopia

Variable	r	p-value
Near Work		
Degree of Myopia	0,264	0,020

Table 2 shows a p-value of 0.020, which is less than the significance level $\alpha = 0.05$. This indicates a statistically significant relationship between near work and the degree of myopia in adolescents. The positive correlation coefficient ($r = 0.264$) suggests that increased near work activity is associated with a higher degree of myopia, although the relationship is weak.

Tabel 3. Relationship Between Duration of Book Reading and Degree of Myopia

Indicator	p-value
Reading Duration	
Degree of Myopia	0,025

Table 3 The p-value of 0.025 indicates a significant relationship between the duration of reading books and the degree of myopia in adolescents.

Tabel 4. Relationship Between Duration of Smartphone/Tablet Use and Degree of Myopia

Indicator	p-value
Smartphone/Tablet	
Duration	0,005
Degree of Myopia	

Table 4 a p-value of 0.005 shows a statistically significant relationship between smartphone/tablet use and the degree of myopia.

Tabel 5. Relationship Between Duration of Laptop/Computer Use and Degree of Myopia

Indicator	
Laptop/Computer Duration	
Degree of Myopia	

Table 5 the p-value of 0.036 indicates a significant relationship between the duration of laptop/computer use and the degree of myopia.

Tabel 6. Relationship Between TV Watching Duration and Degree of Myopia

Indicator	p-value
TV Watching Duration	
Degree of Myopia	0,042

Table 6 The p-value of 0.042 shows a significant association between

the duration of watching television and the degree of myopia in adolescents.

Discussion

The study involved 33 adolescent respondents aged between 10 and 18 years. According to Muryantisa et al. (2024), the highest incidence of myopia cases at Bali Mandara Eye Hospital in 2022 was in the adolescent group, totaling 55 patients (41.4%). In terms of gender, the majority of respondents were female (54.5%) compared to males (45.5%). Supit & Winly (2021) found that females have a 1.21 times higher risk of developing myopia than males. This may be attributed to females spending less time outdoors and engaging in more near work activities. Limited exposure to sunlight, which plays a role in ocular accommodation and light refraction on the retina, can increase the risk of developing myopia. Sufficient sunlight helps train the eyes in focusing light properly (Lestari, 2020). This study found that the highest proportion of participants had mild myopia (45.5%), followed by moderate (30.3%), and severe (24.2%). These findings align with Muryantisa et al. (2024), who reported that mild myopia was the most common type (54.9%) at Bali Mandara Eye Hospital. In terms of heredity, 57.6% of respondents reported a parental history of myopia. According to the Indonesian Ministry of Health's Non-Communicable Disease Prevention Directorate (P2PTM Kemenkes, 2024), genetic factors are among the primary causes of myopia, influencing the

structure of the eyeball. Children are three times more likely to develop myopia if one parent is affected, and six times more likely if both parents are. However, genetic predisposition alone is insufficient—environmental factors also play a significant role in the development of myopia (Supit & Winly, 2021).

Respondents reported spending 7–11 hours per week (57.6%) on outdoor activities, 2–6 hours (33.3%), and 12–16 hours (9.1%). Outdoor activities have a strong protective effect against myopia, even among children with a genetic predisposition (Jiang et al., 2021). High-intensity light outdoors may affect axial eye growth and trigger dopamine release, which helps inhibit eye elongation. Sunlight exposure also stimulates the synthesis of vitamin D, which may help regulate scleral growth and ciliary muscle tone—factors crucial to retinal image clarity (Zhang & Deng, 2020).

The Kendall's Tau-c test revealed a p-value of 0.020 ($p < 0.05$), indicating a statistically significant relationship between near work and the degree of myopia. These results are consistent with research by Sukanto et al. (2019), which reported a significant correlation ($p = 0.006$) between near work activities and myopia. Longer school hours, homework, and shifts in leisure activities—particularly among adolescents who favor screen-based entertainment over outdoor play—contribute to this trend (Philipp et al., 2022). The positive correlation ($r = 0.264$) implies that greater near work is

associated with more severe myopia, although the strength of the correlation is weak, suggesting that other factors such as heredity and outdoor exposure also influence myopia progression.

Kendall's Tau-b analysis showed a p-value of 0.025, indicating a significant correlation between book reading duration and myopia severity. This supports findings by Chhabra et al. (2022), who found a significant positive correlation between myopia prevalence and reading time. Additionally, reading posture and lighting are important. Jiang et al. (2022) noted that maintaining a distance of more than 33 cm from the book may help prevent and control myopia, and Liang et al. (2024) emphasized that upright posture could be an effective behavioral intervention. Chhabra et al. (2022) also found that reading in dim light significantly increases the risk of myopia ($p = 0.0006$). Parents should ensure children study in well-lit environments to reduce the prevalence of myopia.

The test results showed a significant association between smartphone/tablet use and myopia severity ($p = 0.005$). This aligns with Wea et al. (2018), who found that over half of respondents using smartphones for more than four hours daily had myopia. Mobile devices differ from traditional reading materials in wavelength, size, contrast, resolution, and spectral composition. They also emit high-energy blue light, which can damage retinal cells and disrupt circadian rhythms, leading to changes in genes like MMPs and TGF- β involved

in scleral remodeling and eye elongation (Li et al., 2021; Chakraborty et al., 2018). Parents should limit screen time, encourage outdoor activities, and use anti-blue light filters or glasses to mitigate risks. Moreover, prolonged use of smartphones can reduce blinking frequency, contributing to dry eyes and ocular fatigue (Choi et al., 2018). Chronic eye strain may cause accommodative spasms that promote myopia development (McBrien & Millodot, 1986).

The duration of laptop/computer use was also significantly correlated with myopia ($p = 0.036$), as supported by Ariaty et al. (2019) and Enthoven et al. (2020). Children using digital screens extensively are more likely to develop myopia. High visual demands on digital devices can exacerbate Computer Vision Syndrome (CVS), manifesting in symptoms like dry or strained eyes (American Optometric Association, 2024). Kurmasela et al. (2013) found that most students began experiencing CVS symptoms after 2–3 hours of laptop use. The 20-20-20 rule (taking a 20-second break to view something 20 feet away every 20 minutes) is recommended to reduce CVS and maintain eye health (P2PTM Kemenkes, 2024).

Lastly, TV watching duration also showed a significant association with myopia ($p = 0.042$), consistent with findings by Nurjanah (2018). Prolonged screen exposure reduces blink rates, leading to dry, irritated eyes. Blue light from screens reduces contrast and causes fatigue. Sitting too close to

the TV (less than five times the screen width) forces excessive accommodation, potentially leading to lens and muscle changes that contribute to myopia (Saminan, 2013). Healthy screen habits—such as maintaining viewing distance, limiting screen time, and increasing outdoor activities—are essential to protect eye health.

Conclusion

This study concludes that there is a significant relationship between near work activities and the degree of myopia in adolescents at RSD dr. Soebandi Jember. The Kendall's Tau analysis showed a positive correlation, indicating that increased near work is associated with a higher degree of myopia. In addition, specific activities—including the duration of book reading, smartphone/tablet use, laptop/computer use, and television watching—were also found to be significantly correlated with the severity of myopia. These findings suggest that changes in visual behavior, particularly among school-aged children, contribute to the rising prevalence of myopia. Preventive efforts are needed, such as managing screen time, promoting healthy reading habits, and conducting regular eye examinations, to reduce the risk and progression of myopia in adolescents

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