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Analysis Of Medical Records Officers' Work Postures In Registration Section Activities Using The Rapid Upper Limb Assessment (RULA) Method At The DTP Rajamandala Community Health Center

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Abstract

The implementation of Electronic Medical Records increases the intensity of computer-based work for medical record officers, potentially leading to non-ergonomic work postures and musculoskeletal disorders. This study aims to analyze the work posture of medical record officers in Electronic Medical Record registration activities using the Rapid Upper Limb Assessment (RULA) method at the DTP Rajamandala Community Health Center. This study uses a descriptive method with a descriptive quantitative approach. The study population consisted of five medical record officers with a total sampling technique so that the entire population was used as a research sample. Data collection was carried out using the Rapid Upper Limb Assessment (RULA) observation sheet, the Nordic Body Map (NBM) questionnaire, observation, documentation studies, and literature studies. Data analysis was carried out descriptively based on the results of the RULA assessment and the Nordic Body Map score. The results showed that four respondents had a moderate risk level of musculoskeletal complaints and one respondent had a low risk level. The RULA analysis resulted in a score of 6 in Posture 1 indicating the need for immediate investigation and improvement and a score of 4 in Posture 2 indicating the need for investigation and improvement. In conclusion, the Electronic Medical Record registration activity still has ergonomic risks that have the potential to cause musculoskeletal disorders, so it is necessary to improve work stations and apply ergonomic principles to improve the safety and health of officers.

Keywords: Electronic Medical Records, Ergonomic Risk, Musculoskeletal Disorders, Rapid Upper Limb Assessment, Working Posture

INTRODUCTION

Electronic Medical Records (EMR) are medical records created using an electronic system for the management of medical records as stipulated in Minister of Health Regulation Number 24 of 2022. EMRs contain patient identity, examination results, treatment, procedures, and other services provided to patients. This regulation requires all healthcare facilities in Indonesia to implement EMRs with a transition period until December 31, 2023. The implementation of this policy is expected to improve the quality of healthcare services through more accurate, efficient, and integrated recording. In addition to supporting the accuracy of patient care and reducing the risk of medical errors, EMRs also assist healthcare facility management in documenting important information, such as doctor visits and the accuracy of care provided, thereby saving time and costs and avoiding data duplication (Soraya et al., 2022).

The implementation of EMR requires medical records officers to work on computers for relatively long periods of time, engaging in static and repetitive activities, such as entering patient data, coding illnesses, and accessing and verifying medical record information. These work characteristics cause officers to maintain a sitting position for extended periods, potentially leading to less ergonomic work postures. This situation makes ergonomics a crucial aspect that needs to be considered so that the implementation of EMR not only improves the quality of healthcare services but also maintains the safety and health of officers.

Continuous computer-based work activities can lead to inappropriate sitting postures, a hunched neck, raised shoulders, and non-neutral wrist positions. If these conditions persist

for long periods, the risk of musculoskeletal disorders in the neck, shoulders, back, and upper extremities will increase. Musculoskeletal disorders are one of the ergonomic problems often found in work environments that require certain physical activities or work that is done statically. Working postures such as bending or squatting can cause pain in the limbs and increase the risk of work injuries, such as back pain and low back pain (Pegiardi & Setyaning Handika, 2017).

According to the Ontario Occupational Safety and Health Council (2007), musculoskeletal disorders are pain that occurs in tendons, muscles, and nerves due to work activities that cause tissue damage, resulting in pain and discomfort. These disorders can include muscle tension, inflammation, degeneration, bruising, microfactoring, and fractures. Furthermore, repetitive movements over long periods can also cause disorders in muscles, joints, and ligaments, resulting in musculoskeletal complaints (Rula & Wera, 2020). Based on a preliminary study of six Electronic Medical Records officers who worked sitting in front of a computer for approximately five hours per day, complaints were found in the waist, lower neck, back, upper neck, and right shoulder. This condition indicates a potential ergonomic risk that needs to be evaluated through a work posture assessment using the Rapid Upper Limb Assessment (RULA) method, a method used to assess ergonomic risks in static and repetitive work, particularly computer-based work.

Based on these conditions, this study aims to analyze the working posture of medical record officers in the Electronic Medical Record registration section activities at the DTP Rajamandala Health Center using the Rapid Upper Limb Assessment (RULA) method, including a description of the working posture, the results of the work posture analysis, and the level of ergonomic risk faced by officers. This study is important to be carried out as a basis for identifying potential ergonomic risks so that it can be a consideration for the DTP Rajamandala Health Center in efforts to prevent musculoskeletal disorders in medical record officers. The novelty of this study lies in the analysis of the working posture of medical record officers in the Electronic Medical Record registration section activities at the DTP Rajamandala Health Center using the Rapid Upper Limb Assessment (RULA) method to evaluate the level of ergonomic risk in computer-based work activities.

RESEARCH METHODS

This study uses a descriptive research method with a descriptive quantitative approach. The research method is a method used by researchers to obtain data in accordance with the research objectives (Sugiyono, 2019). According to Bogdan and Biklen in Sugiyono (2020), descriptive quantitative research is a process of collecting data which is then analyzed and described so that it is easily understood. In this study, a descriptive approach was used to describe the working posture conditions of medical record officers in Electronic Medical Records activities and to analyze the level of ergonomic risk using the Rapid Upper Limb Assessment (RULA) method. Before the research was conducted, a preliminary study was conducted through a field survey to identify problems, observe the officers' work processes, and conduct a literature study on ergonomics, the RULA method, and the Nordic Body Map as a basis for conducting the research.

The research instruments used included the Rapid Upper Limb Assessment (RULA) observation sheet to assess work posture and the Nordic Body Map (NBM) questionnaire to identify musculoskeletal complaints experienced by respondents. In addition, researchers used an interview guide in the form of a list of questions, stationery as a medium for data recording, and supporting documents related to the research. Data collection techniques were carried out through observation, questionnaires, documentation studies, and literature studies. Observations were carried out to directly observe the work activities of medical

record officers in the registration section, while questionnaires were used to obtain information about musculoskeletal complaints experienced by respondents. Documentation studies were conducted by studying various documents related to the research, while literature studies were used as a theoretical basis through a review of books, journals, and relevant scientific references (Notoatmodjo, 2018; Saryono & Dwi Anggraeni, 2013). Data analysis was carried out descriptively by interpreting the results of the RULA assessment based on the ergonomic risk level category and the Nordic Body Map score according to the complaint level category obtained.

The population in this study was all five medical records officers at the DTP Rajamandala Community Health Center. According to Amin (2023), a population is a group of objects or subjects with specific characteristics and is determined by the researcher for study. The sampling technique used was total sampling, where all members of the population were used as the research sample, resulting in a total sample size of five individuals. This technique was chosen because the population size was relatively small, allowing all medical records officers to serve as research respondents (Amin, 2021).

The research procedure began with a preliminary study to identify the working conditions of medical record officers in Electronic Medical Records activities at the DTP Rajamandala Community Health Center. Data were then collected through observation of work postures using the RULA method, distribution of Nordic Body Map questionnaires to all respondents, and collection of supporting data through documentation and literature studies. The results of the observations and questionnaires were then analyzed descriptively to describe the officers' work postures, determine the level of ergonomic risk based on the RULA method, and identify the level of musculoskeletal complaints experienced by medical record officers in registration activities.

RESULTS AND DISCUSSION

Research result

In the research process, data collection was conducted by distributing Nordic Body Map questionnaires to several operators/workers involved in the sampling process. The following are the names and data of the respondents.

Table 1. Respondent data

No.	Name	Gender	Age	Length of work
1	P1	Woman	34	8 Years
2	P2	Man	33	8 Years
3	P3	Woman	29	5 years
4	P4	Woman	42	10 years
5	P5	Man	43	Year

Nordic Body Map Questionnaire Data

Table 2. Results of the NBM questionnaire

No	Type of Complaint	Complaint Level (workers)					Average NBM
		P1	P2	P3	P4	P5	
1	Neck part on	0	0	0	0	0	0
2	Lower neck	1	1	0	1	1	0.8
3	Left shoulder	0	1	0	0	1	0.4
4	Right shoulder	2	1	2	1	2	1.6
5	Left upper arm	0	1	1	0	0	0.4
6	Back	**2**	**2**	**1**	**2**	**2**	**1.8**

7	Upper arm right	1	0	1	0	0	0.4
8	Waist	1	1	2	1	2	1.4
9	Hips	2	1	2	2	1	1.6
10	Butt	1	1	2	2	1	1.4
11	Left elbow	0	0	0	0	1	0.2
12	Right elbow	1	1	0	1	0	0.6
13	Left forearm	1	1	0	1	0	0.6
14	Right forearm	0	2	2	1	1	1.2
15	Wristleft hand	1	1	0	1	1	0.8
16	Wristright hand	1	2	1	1	2	1.4
17	Left hand	1	1	0	1	0	0.6
18	Right hand	2	1	2	1	1	1.4
19	Left thigh	0	0	0	1	1	0.4
20	Right thigh	0	1	1	1	2	1
21	Left knee	1	1	0	0	1	0.6
22	Right knee	1	1	1	1	1	1
23	Left calf	0	0	0	0	0	0
24	Right calf	0	0	0	0	0	0
25	Wristleft leg	0	1	0	1	0	0.4
26	Wristright foot	0	1	1	1	0	0.6
27	Left leg	1	1	1	0	1	0.8
28	Right foot	0	1	1	0	1	0.6
	RESULTS	20	**25**	21	21	23	**22**

Based on table 2 above, it can be seen that the highest pain score is the back area (1.8), the lowest pain score does not show pain is the upper neck area, left and right calves. From the NBM questionnaire, six body parts that show high complaint scores during work activities are the shoulders, back, hips, right forearm, right wrist, and right hand. These body parts are the areas with the highest complaints, indicating that they require special attention to prevent musculoskeletal injuries.

Table 3. Classification of MSD risk levels based on individual total scores

Worker	Total Individual Score	Results
1	20	Low
2	25	Currently
3	21	Currently
4	21	Currently
5	23	Currently

Based on table 3 above, the highest score is 25, indicating a moderate level of risk of musculoskeletal complaints. Of the 5 people studied, four showed a moderate risk, and one person showed a low risk.

Analysis of the Sampling Process Using the Rula Method.

The measurement is adjusted to the RULA worksheet divided into two parts, dividing the body into 2 separate groups, namely A and B. Group A is the upper body which includes: lower arms, upper arms, and wrists; while group B is the neck, trunk, and legs. The value of 2 groups is calculated by entering scores into the table for each body posture individually, which results in the final total value of the body postures of group A and group B. After that, the value is changed according to C to obtain the final value. From the sum of the final values, researchers can determine the corrective or preventive actions that must be taken if necessary. The action level is divided into 4 levels. In this RULA measurement, two employee samples were taken based on the Nordic Body Map risk level classification,

namely staff 2 and staff 3, then measured using the Angulus application per angle from the arms, wrists, neck, torso and legs.

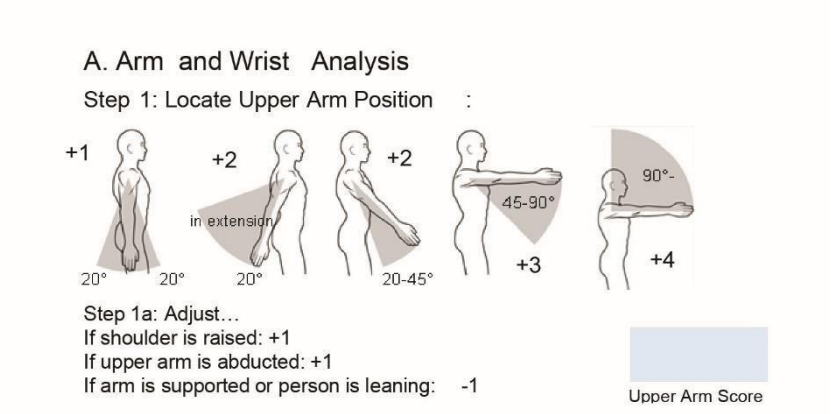
Posture 1

Arm and Wrist Analysis Posture 1

The first stage is taking angles during work postures on the arms and wrists that are the employee's habits, using the Angulus application to make it easier to take work posture angles, through photos that have been documented previously when employees provide services at registration.



Figure 1. Posture 1 Upper arms torso and legs.



Analysis of upper arm posture using the Rapid Upper Limb Assessment (RULA) worksheet shows that in photo 1 the upper arm forms an angle of 27.21°. Based on the RULA assessment criteria, this angle is included in posture number 3 with an initial score of 2.

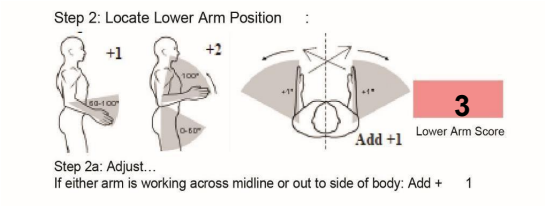




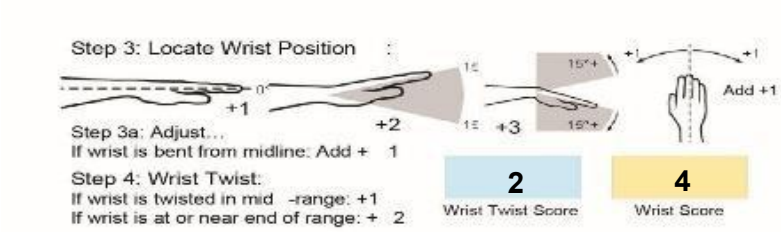
Figure 2. Awkward posture of 1 forearm

Furthermore, no adjustment score was added because the shoulders were not in a raised position, the arms were not pulled back, and the arms were not supported. Therefore, the final score for the upper arm posture assessment was 2.

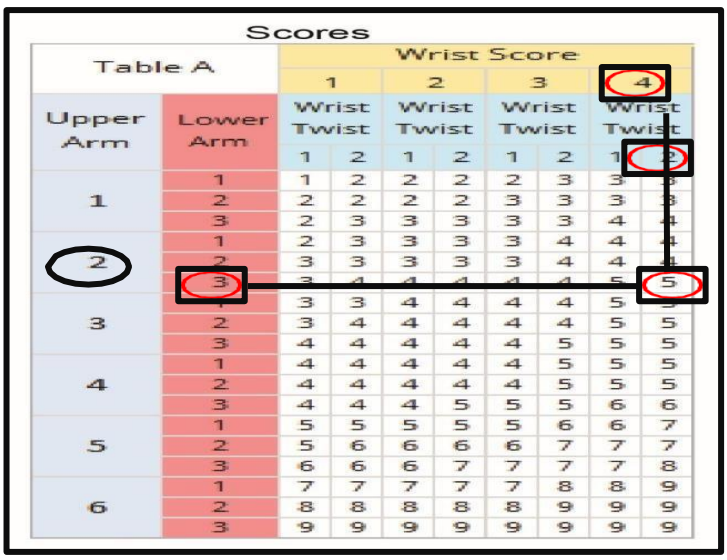
Next, in the lower arm section of the RULA worksheet, the work posture in the photo of awkward posture 1 is obtained, which forms an angle of 161.10 °, so it is included in work posture number 2 with a value of 2 and because when working, the arm moves or moves to the right or left, an adjustment value of 1 is added so that the value of the lower arm is 3.



Figure 3. Awkward Posture 1 Wrist



In the wrist posture based on the formation of the angle in the working posture, the wrist is in accordance with the observations documented in the photo and applied to the RULA worksheet, the position of the wrist is found to be bent at 165.5° which is included in the working posture number 3 with a value of 3 and there is movement to the right or left, an adjustment of value 1 is added so that the value of the wrist position becomes 4. For the wrist position to form a horizontal (sleeping position) notin a vertical position (handshake position or standing position) the result is 2.



Scores

Table A		Wrist Score							
		1		2		3		4	
Upper Arm	Lower Arm	Wrist Twist		Wrist Twist		Wrist Twist		Wrist Twist	
		1	2	1	2	1	2	1	2
1	1	1	2	2	2	2	3	3	3
	2	2	2	2	2	3	3	3	3
	3	2	3	3	3	3	3	4	4
2	1	2	3	3	3	3	4	4	4
	2	3	3	3	3	3	4	4	4
	3	3	4	4	4	4	4	5	5
3	1	3	3	4	4	4	4	5	5
	2	3	4	4	4	4	4	5	5
	3	4	4	4	4	4	5	5	5
4	1	4	4	4	4	4	5	5	5
	2	4	4	4	4	4	5	5	5
	3	4	4	4	5	5	5	6	6
5	1	5	5	5	5	5	6	6	7
	2	5	6	6	6	6	7	7	7
	3	6	6	6	7	7	7	7	8
6	1	7	7	7	7	7	8	8	9
	2	8	8	8	8	8	9	9	9
	3	9	9	9	9	9	9	9	9

Figure 4. Table Value A Posture 1

Table C		Neck, Trunk, Leg Score						
		1	2	3	4	5	6	7+
Wrist / Arm Score	1	1	2	3	3	4	5	5
	2	2	2	3	4	4	5	5
	3	3	3	3	4	4	5	6
	4	3	3	3	4	5	6	6
	5	4	4	4	5	6	7	7
	6	4	4	5	6	6	7	7
	7	5	5	6	6	7	7	7
	8+	5	5	6	7	7	7	7

Figure 5. Table C Values for Arm and Wrist Posture1

Then the next stage is filling in the table A image according to the RULA worksheet, placing the results of the upper arm posture value of 3, the lower arm posture of 3, the wrist posture of 4 and the wrist twist posture of 2, so that the value obtained in the table A image is 5. Then when the use of muscles in working occurs statically for more than 10 minutes, the result is 1, in addition to the addition of a load of less than 4.4 lbs so that the value is 0, after that it is added up and arranged downwards 5 + 1 + 0 = 6. Then the value is entered in the table C image.

Awkward Neck, Torso and Leg Posture Analysis 1

The second stage is taking angles during work postures on the neck and torso that are the habits of workers, using the Angulus application to make it easier to take angles of work postures, through photos that have been previously documented when employees do their work in the office.



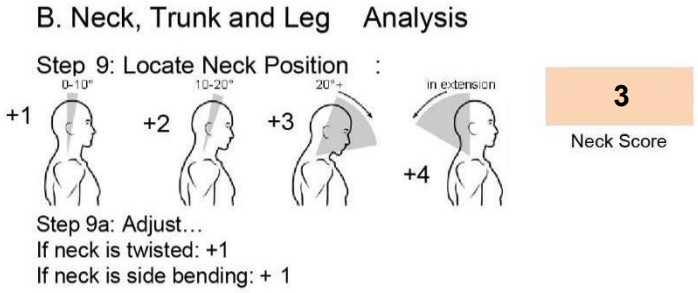
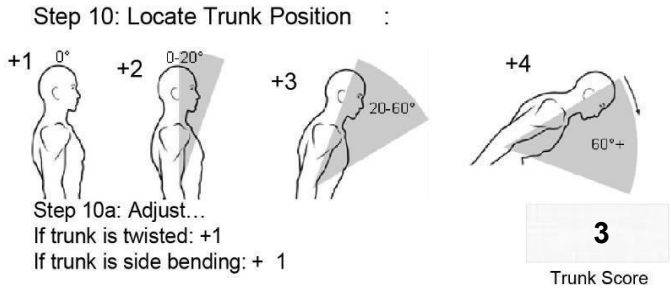


Figure 6. Awkward Posture of 1 Neck

Analysis of the neck section using the RULA worksheet, obtained the working posture in the photo of awkward posture 1, namely forming an angle of 34.71° which is included in posture number 3 with a value of 3, after that no adjustments were made because the head did not rotate and was not in a tilted position, so the results were not added.



Figure 7. Awkward Posture of 1 Torso



Next, in the torso posture section on the RULA worksheet, the work posture in the awkward posture photo 1 is obtained, namely forming an angle of 26.61°, so it is included in work position number 3 with a value of 3.

If the foot position is still felt to be comfortable while working, then a score of 1 is obtained.



Figure 8. Awkward Position of 1 Leg

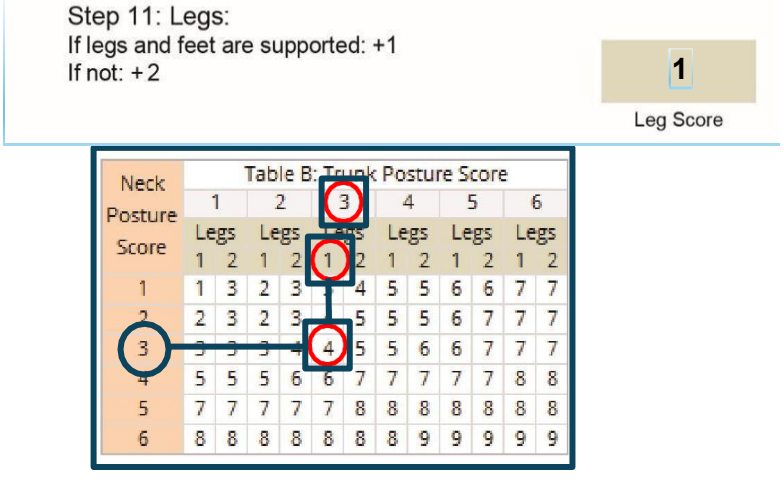


Figure 9. Table B Values Neck, Torso and Legs Awkward Posture 1

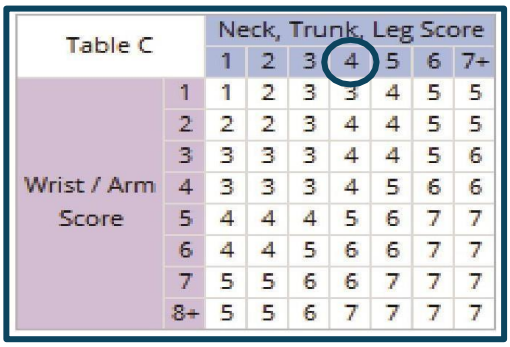
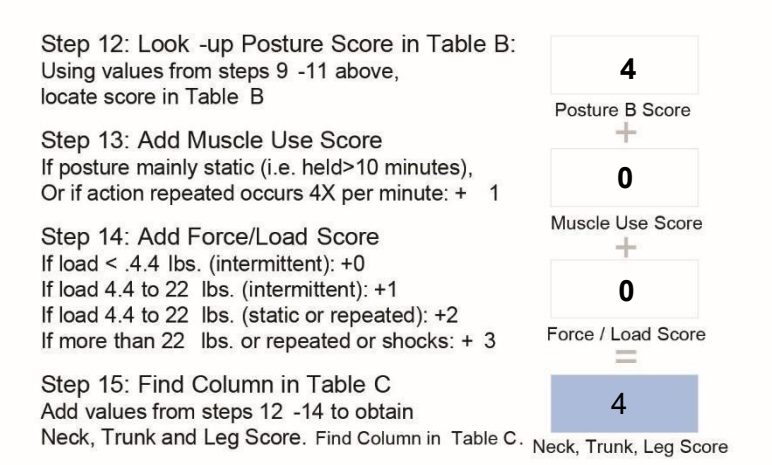


Table C		Neck, Trunk, Leg Score						
		1	2	3	4	5	6	7+
Wrist / Arm Score	1	1	2	3	3	4	5	5
	2	2	2	3	4	4	5	5
	3	3	3	3	4	4	5	6
	4	3	3	3	4	5	6	6
	5	4	4	4	5	6	7	7
	6	4	4	5	6	6	7	7
	7	5	5	6	6	7	7	7
	8+	5	5	6	7	7	7	7

Figure 10. Table C Values Neck, Torso, Legs Posture 1



Then the next stage is filling in the table B image according to the RULA worksheet, placing the results of the neck posture value of 3, the torso posture of 3, the leg posture of 1, so that the value in the table B image is 4. Then when the use of muscles in working occurs statically for more than 10 minutes, the result is 0, in addition to the addition of a load of less than 4.4 lbs, the value is 0, after that, the addition is added down 4 + 0 + 0 = 4. Then the value is entered in the table C image.

RULA Posture 1 Score Results

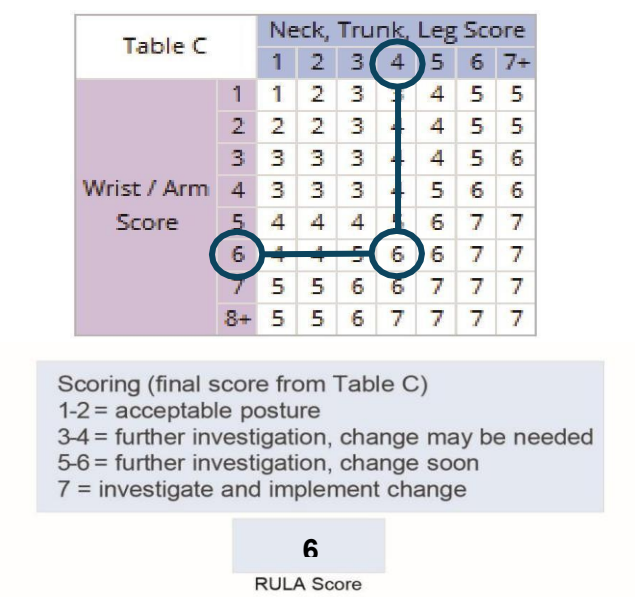


Table C		Neck, Trunk, Leg Score						
		1	2	3	4	5	6	7+
Wrist / Arm Score	1	1	2	3	3	4	5	5
	2	2	2	3	4	4	5	5
	3	3	3	3	4	4	5	6
	4	3	3	3	4	5	6	6
	5	4	4	4	5	6	7	7
	6	4	4	5	6	6	7	7
	7	5	5	6	6	7	7	7
	8+	5	5	6	7	7	7	7

Figure 11. RULA Score Results for Awkward Posture 1

Finally, the results from table A and table B are entered into table C to obtain the final RULA results for awkward posture 1, which has a value of 6. The results of this study on awkward posture 1 are in accordance with
by using the RULA method in the book A Step by Step Guide Rapid Upper Limb Assessment (RULA) from Ergo Plus.

Posture 2

Arm and Wrist Analysis Posture 2

The first stage is taking angles during work postures on the arms and wrists that are the employee's habits, using the Angulus application to make it easier to take work posture angles, through photos that have been documented previously when employees provide services at registration.

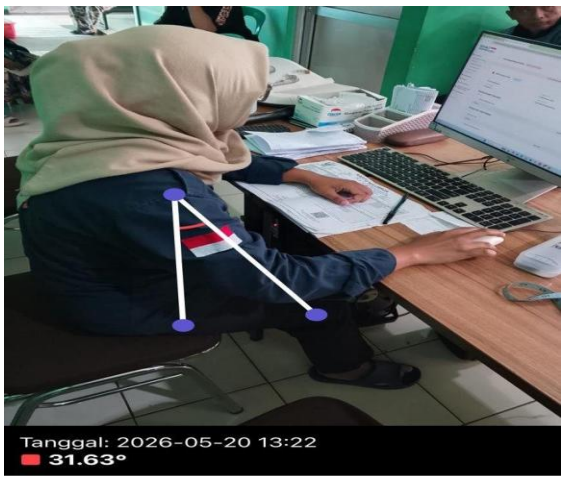
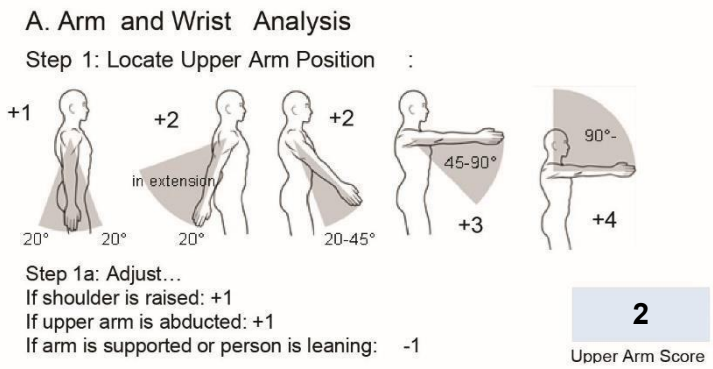
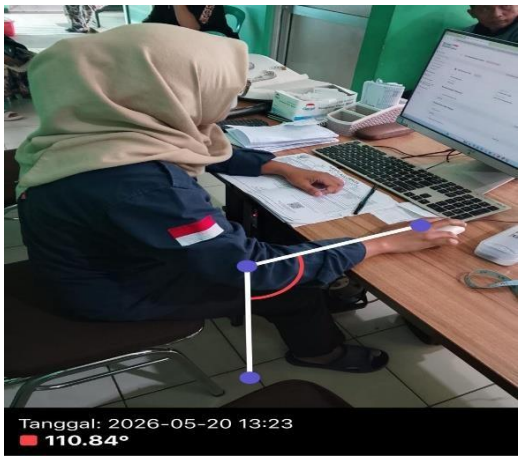


Figure 12. Upper Arm Posture 2



Analysis of the upper arm section using the RULA worksheet, obtained a working posture in awkward posture 2, namely forming an angle of 31.63 ° which is included in posture number 3 with a value of 2, after that because the shoulders are not raised, not pulled and not supported, no adjustments are added, so the upper arm value obtained is 2.



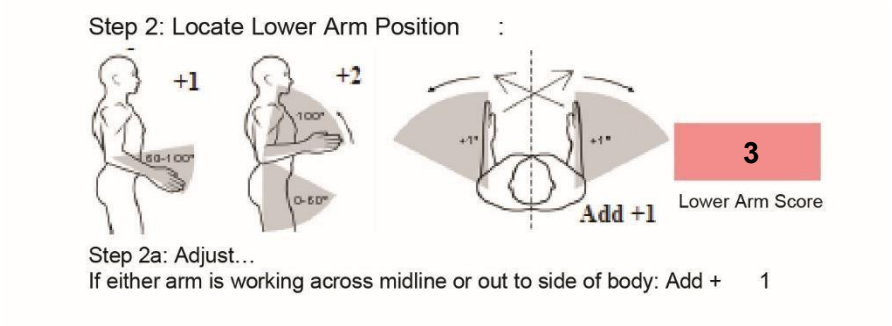


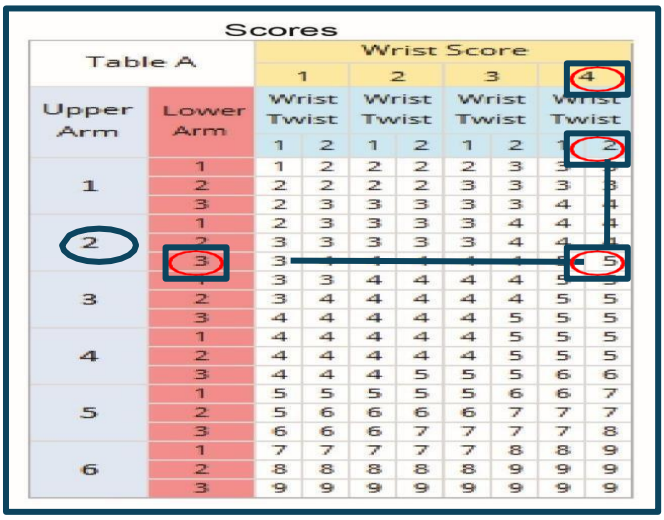
Figure 13. Awkward posture of 2 forearms

Next, in the lower arm section in the RULA worksheet, the work posture in the photo of awkward posture 2 is obtained, which forms an angle of 110.84°, so it is included in work posture number 2 with a value of 2 and because when working, the arm moves or moves to the right or left, an adjustment value of 1 is added so that the value of the lower arm is 3.



Figure 14. Awkward Posture of 2 Wrists

In the wrist posture based on the formation of angles in the working posture, the wrist is in accordance with the observations documented in the photo and applied to the RULA worksheet, the position of the wrist posture is found to have a bending of 169.54° which is included in the working posture number 3 with a value of 3 and there is movement to the right or left, an adjustment of value 1 is added so that the value of the wrist posture position becomes 4. For the wrist position to form a horizontal (sleeping position) not a vertical position (handshake position or standing position) then the resulting value is 2.



Scores

Table A

Upper Arm	Lower Arm	Wrist Score 1		2		3		4	
		Wrist Twist 1	2	1	2	1	2	1	2
1	1	1	2	2	2	2	3	3	3
	2	2	2	2	2	3	3	3	4
	3	2	3	3	3	3	3	4	4
2	1	2	3	3	3	3	4	4	4
	2	3	3	3	3	3	4	4	4
	3	3	4	4	4	4	4	5	5
3	1	3	3	4	4	4	4	5	5
	2	3	4	4	4	4	4	5	5
	3	4	4	4	4	4	5	5	5
4	1	4	4	4	4	4	5	5	5
	2	4	4	4	4	4	5	5	5
	3	4	4	4	5	5	5	6	6
5	1	5	5	5	5	5	6	6	7
	2	5	6	6	6	6	7	7	7
	3	6	6	6	7	7	7	7	8
6	1	7	7	7	7	7	8	8	9
	2	8	8	8	8	8	9	9	9
	3	9	9	9	9	9	9	9	9

Step 5: Look -up Posture Score in Table A:
Using values from steps 1 -4 above, locate score in Table A

Step 6: Add Muscle Use Score
If posture mainly static (i.e. held>10 minutes),
Or if action repeated occurs 4X per minute: + 1

Step 7: Add Force/Load Score
If load < .4.4 lbs. (intermittent): +0
If load 4.4 to 22 lbs. (intermittent): +1
If load 4.4 to 22 lbs. (static or repeated): +2
If more than 22 lbs. or repeated or shocks: + 3

Step 8: Find Row in Table C
Add values from steps 5 -7 to obtain Wrist and Arm Score. Find row in Table C.

5 Posture Score A
+
1 Muscle Use Score
+
0 Force / Load Score
=
6 Wrist & Arm Score

Figure 15. Table A Values for Arm and Wrist Posture 2

Table C

Wrist / Arm Score	Neck, Trunk, Leg Score 1	2	3	4	5	6	7+
1	1	2	3	3	4	5	5
2	2	2	3	4	4	5	5
3	3	3	3	4	4	5	6
4	3	3	3	4	5	6	6
5	4	4	4	5	6	7	7
6	4	4	5	6	6	7	7
7	5	5	6	6	7	7	7
8+	5	5	6	7	7	7	7

Figure 16. Table C Values for Arm and Wrist Posture 2

Then the next stage is filling in the image in table A according to the RULA worksheet, placing the results of the upper arm posture value of 2, the lower arm posture value of 3, the wrist posture value of 4 and the shoulder posture value of 5.*wrist twist*has a value of 2, so the posture value in table A is 5. Then, if the muscle is used statically for more than 10 minutes, the result is 1. In addition, for additional loads of less than 4.4 lbs, the value is 0. After that, the values are added down 5 + 1 + 0 = 6. Then the value is entered in table C.

Neck, Torso and Leg Analysis Posture 2

The second stage is taking angles during work postures on the neck and torso that are the habits of workers, using the Angulus application to make it easier to take angles of work postures, through photos that have been previously documented when employees do their work in the office.

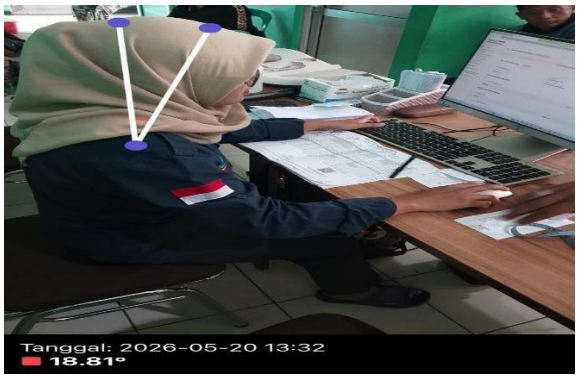


Figure 17. Posture 2 Neck

Analysis of the neck section using the RULA worksheet, obtained the working posture in photo 2, namely forming an angle of 18.81° which is included in posture number 2 with a value of 2, after no adjustments were made because the head did not rotate and was not in a tilted posture, the results were not added.

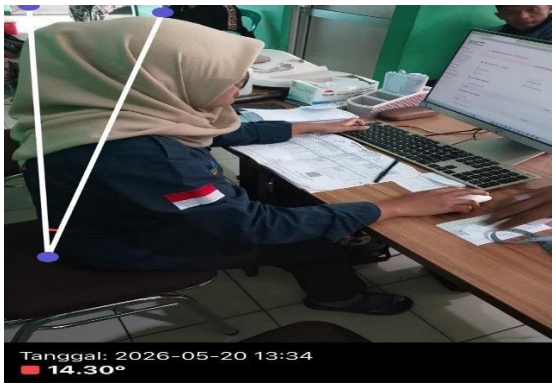


Figure 18. Awkward Posture of 2 Torso

Next, in the torso posture section on the RULA worksheet, the work posture in the photo of awkward posture 2 is obtained, namely forming an angle of 14.30°, so it is included in work posture number 2 with a value of 2.

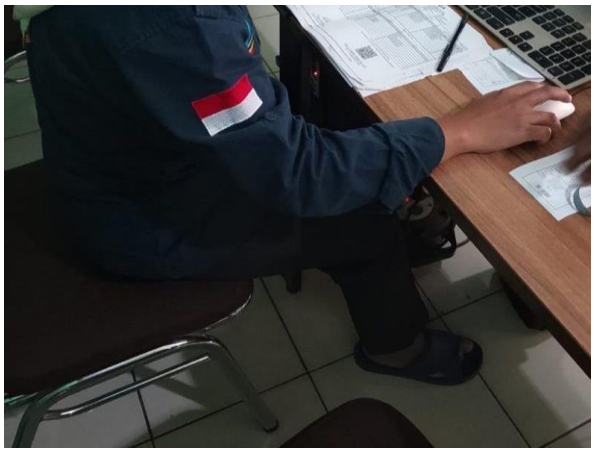
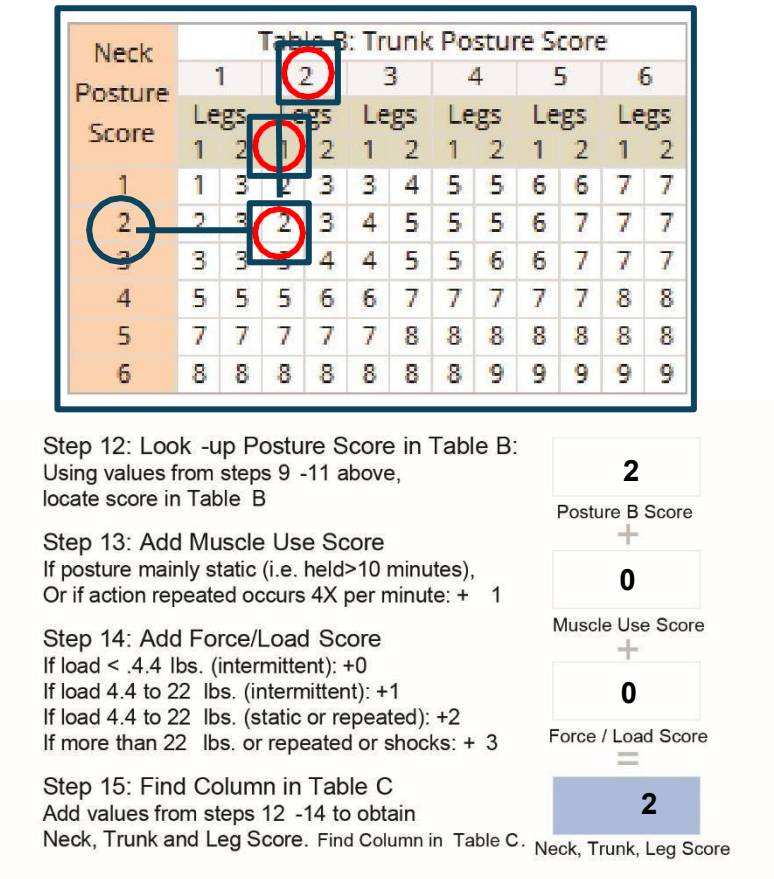


Figure 19. Awkward 2-Legged Posture

If the leg posture is still felt to be comfortable while working, then a score of 1 is obtained.



Neck Posture Score	Table B: Trunk Posture Score											
	1		2		3		4		5		6	
	Legs		Legs		Legs		Legs		Legs		Legs	
	1	2	1	2	1	2	1	2	1	2	1	2
1	1	3	2	3	3	4	5	5	6	6	7	7
2	2	3	2	3	4	5	5	5	6	7	7	7
3	3	3	3	4	4	5	5	6	6	7	7	7
4	5	5	5	6	6	7	7	7	7	7	8	8
5	7	7	7	7	7	8	8	8	8	8	8	8
6	8	8	8	8	8	8	8	9	9	9	9	9

Step 12: Look -up Posture Score in Table B:
Using values from steps 9 -11 above,
locate score in Table B

2
Posture B Score

\+

Step 13: Add Muscle Use Score
If posture mainly static (i.e. held>10 minutes),
Or if action repeated occurs 4X per minute: + 1

0
Muscle Use Score

\+

Step 14: Add Force/Load Score
If load < .4.4 lbs. (intermittent): +0
If load 4.4 to 22 lbs. (intermittent): +1
If load 4.4 to 22 lbs. (static or repeated): +2
If more than 22 lbs. or repeated or shocks: + 3

0
Force / Load Score

=

Step 15: Find Column in Table C
Add values from steps 12 -14 to obtain
Neck, Trunk and Leg Score. Find Column in Table C.

2
Neck, Trunk, Leg Score

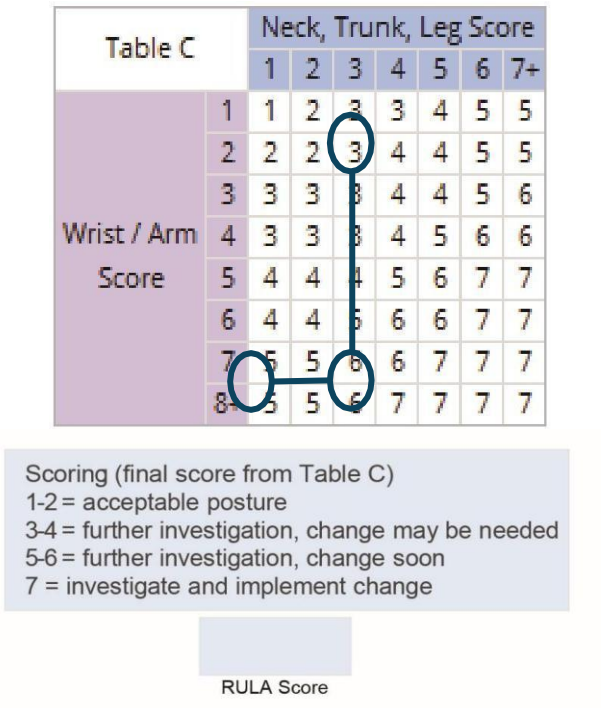
Figure 20. Table Value B Awkward Posture 2 Neck, Torso

Table C		Neck, Trunk, Leg Score						
		1	2	3	4	5	6	7+
Wrist / Arm Score	1	1	2	3	3	4	5	5
	2	2	2	3	4	4	5	5
	3	3	3	3	4	4	5	6
	4	3	3	3	4	5	6	6
	5	4	4	4	5	6	7	7
	6	4	4	5	6	6	7	7
	7	5	5	6	6	7	7	7
	8+	5	5	6	7	7	7	7

Figure 21. Table Value C Awkward Posture 2 Neck, Torso, Legs

Then the next stage is filling in the table B image according to the RULA worksheet, placing the results of the neck posture value of 2, the torso posture of 2, the leg posture of 1, so that the value in the table B image is 2. Then the use of muscles in working occurs statically for more than 10 minutes, the result is 0, in addition to the addition of a load of less than 4.4 lbs so that the value is 0, after that it is added up and stacked down 2 + 0 + 0 = 2. Then the value is entered in the table C image.

RULA Score Results for Awkward Posture 2



4

Figure 22. RULA Score Results for Awkward Posture 2

Finally, the results from table A and table B are entered into table C to obtain the final RULA results for posture 2, which has a value of 4. The results of this posture 2 study are in accordance with the use of the RULA method in the book A Step by Step Guide Rapid Upper Limb Assessment (RULA) from Ergo Plus.

Research Discussion

From the results of the posture of 1 respondent with moderate risk, a RULA score of 6 was obtained, in awkward posture 1 with complaints of arms and wrists worth 6 then the neck, trunk and legs worth 4 which if a line is drawn in table c has a final RULA value of 6, with the results of the NBM experiencing the most severe complaints of pain and very pain are in the waist, buttocks, left wrist, left calf, right calf.

Then in the posture of 2 respondents with low risk, a RULA score of 4 was obtained with complaints of arms and wrists worth 6 then the neck, trunk and legs worth 2 which if drawn a line in table c has a final value of RULA 4, with the results of the NBM experiencing the most severe complaints of pain and very pain are in the upper neck, lower neck, right shoulder, upper arm, pain in the buttocks.

In this study, the NBM results showed that 3 employees had a low risk level and 2 employees had a moderate risk level. The RULA results for respondent 1 with severe NBM results obtained a RULA score of 6, respondent 2 with moderate NBM results obtained a RULA score of 4, where respondent 1 needed immediate investigation and improvement, and respondent 2 needed investigation and improvement that might be necessary.

This is similar to previous research conducted by Ersa Dwi Meitilana Anugraheni Lestari (2018) entitled "Analysis of Work Posture in Computer and Laptop User Workers Using the Rapid Upper Limb Assessment Method at PT. Trakindo Utama Head Office, South Jakarta" this research was conducted on employees in the head office of PT. Trakindo Utama with the results of the NBM the biggest complaints were the upper neck (50%), right shoulder (50%), and back (50%). Meanwhile, the top 10 complaints occurred in the neck, torso and wrists. As well as the results of the RULA study with the results of respondent 1 getting a score of 4, respondent 2 getting a score of 3, respondent 3 getting a score of 3, respondent 4 getting a score of 3, respondent 5 getting a score of 4. respondent 6 getting a score of 5, respondent 7 getting a score of 6, respondent 8 getting a score of 6, respondent 9 getting a score of 6, respondent 10 getting a score of 6, of the 10 work postures taken, 5 postures are included in the medium risk that require investigation and repair as soon as possible and 5 postures including high risk that require investigation and repair as soon as possible.

CONCLUSION

The results of the study indicate that the working posture of medical record officers during Electronic Medical Record registration activities at the DTP Rajamandala Community Health Center still has ergonomic risks that require attention. Based on the results of the Nordic Body Map questionnaire, four out of five respondents had a moderate level of risk of musculoskeletal complaints, while one respondent had a low level of risk. The most complaints were felt in the back, shoulders, hips, right forearm, right wrist, and right hand. The results of the Rapid Upper Limb Assessment (RULA) analysis showed that Posture 1 obtained a score of 6, indicating the need for immediate ergonomic investigation and improvement, while Posture 2 obtained a score of 4, indicating that investigation and corrective action are necessary. These findings indicate that Electronic Medical Record registration activities carried out in a static and repetitive sitting position have the potential to increase the risk of musculoskeletal disorders in medical record officers.

This study has limitations because it only involved five medical record officers at one community health center and analyzed two work postures representing registration activities, so the results of the study cannot be generalized to other health care facilities. Therefore, further research is recommended to involve a larger number of respondents, more diverse research locations, and compare the results of the RULA assessment with other ergonomic methods to obtain a more comprehensive picture of ergonomic risks. Practically, the results of this study can be a basis for the DTP Rajamandala Community Health Center to improve the ergonomics of work stations, adjust the position of tables, chairs, and computers, and increase education regarding correct work postures so that the risk of musculoskeletal disorders can be minimized and the quality of Electronic Medical Record services can be continuously improved.

REFERENCES

Amin, N. F., Garancang, S., & Abunawas, K. (2023). *Konsep umum populasi dan sampel dalam penelitian*. PILAR, 14(1).

Ergo Plus. (n.d.). *A step by step guide: Rapid Upper Limb Assessment (RULA).*

Notoatmodjo, S. (2018). *Metodologi penelitian kesehatan*. Rineka Cipta.

Ontario Health and Safety Council. (2007). *Musculoskeletal disorders.*

Pegiardi, & Setyaning Handika. (2017). Analisis postur kerja terhadap risiko gangguan muskuloskeletal.

Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022 tentang Rekam Medis.

Rula, & Wera. (2020). Gangguan muskuloskeletal pada pekerja.

Saryono, & Dwi Anggraeni, M. (2013). *Metodologi penelitian kualitatif dan kuantitatif dalam bidang kesehatan.*

Soraya, et al. (2022). *Indonesia Digital Health Ecosystem 2022.*

Sugiyono. (2019). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.

Sugiyono. (2020). *Metode penelitian kuantitatif, kualitatif, dan R&D.*