



THE EFFECT OF TRANSFORMATIONAL LEADERSHIP ON THE QUALITY OF NURSES' INTERPROFESSIONAL COLLABORATION IN INPATIENT WARDS

Syahrir Aprizal*, Muhammad Hadi, Naryati, Harif Fadillah

Faculty of Nursing, Universitas Muhammadiyah Jakarta, Jl. Cemp. Putih Tengah I No.1, Cemp. Putih Timur, Cemp.

Putih, Jakarta Pusat, Jakarta 10510, Indonesia

*syahrilaprizal88@gmail.com

ABSTRACT

The quality of healthcare services is influenced by healthcare workers' ability to perform effective interprofessional collaboration (IPC). Transformational leadership of head nurses plays an important role in improving communication, coordination, and teamwork among healthcare professionals in inpatient wards. This study aimed to analyze the effect of transformational leadership of head nurses on the quality of interprofessional collaboration among staff nurses in hospital inpatient wards. This study used a quasi-experimental design with a non-equivalent control group design. The sample consisted of 50 respondents, including 25 participants in the intervention group and 25 in the control group selected using purposive sampling. The intervention group received supervision and transformational leadership reinforcement for one month. The instruments used were transformational leadership and PINCOM-Q questionnaires, which were valid and reliable with Cronbach's Alpha values of 0.912 and 0.894, respectively. The data were analyzed using General Linear Model Repeated Measure (GLM-RM). The mean transformational leadership score in the intervention group increased from 139.84 to 179.64, while the control group remained relatively stable. Multivariate analysis showed a significant difference in the intervention group ($p=0.002$; Partial Eta Squared=0.349). The mean IPC score in the intervention group increased from 62.56 to 71.80 with significant results ($p=0.010$; Partial Eta Squared=0.281). GLM-RM analysis demonstrated a significant effect of the intervention on transformational leadership ($F=120.745$; $p<0.001$) and IPC ($F=7.543$; $p=0.008$). Supervision and transformational leadership reinforcement were effective in improving transformational leadership among head nurses and the quality of interprofessional collaboration among staff nurses in hospital inpatient wards.

Keywords: inpatient ward; interprofessional collaboration; nursing supervision; transformational leadership

How to cite (in APA style)

Aprizal, S., Hadi, M., Naryati, N., & Fadhlillah, H. (2026). The Effect of Transformational Leadership on the Quality of Nurses' Interprofessional Collaboration in Inpatient Wards. *Indonesian Journal of Global Health Research*, 8(4), 207–216. <https://doi.org/10.37287/ijghr.v8i4.2084>.

INTRODUCTION

The quality of nursing services is one of the important indicators in determining the quality of healthcare services in hospitals. High-quality nursing care is influenced not only by individual nurses' competencies but also by the ability of healthcare professionals to collaborate effectively across professions. Effective interprofessional collaboration has been shown to improve patient safety, healthcare quality, communication effectiveness, and healthcare system efficiency (Wei et al., 2022; Reeves et al., 2023; Schot et al., 2024). Therefore, harmonious collaboration among nurses, physicians, and other healthcare professionals is an essential aspect of complex inpatient care.

Head nurses have a strategic role as leaders in establishing communication, coordination, and effective working relationships within the nursing environment. Effective leadership from head nurses can create a supportive work atmosphere that encourages collaboration, open communication, mutual respect, and constructive conflict resolution (Marquis & Huston, 2021). One leadership style considered effective in improving teamwork is transformational leadership because it provides motivation, inspiration, and support for staff to achieve common goals.

However, the implementation of interprofessional collaboration in hospitals still faces several challenges, such as miscommunication, lack of coordination, interprofessional conflicts, and organizational cultures that do not fully support teamwork. The World Health Organization emphasizes that effective interprofessional collaboration can improve patient outcomes and reduce the risk of medical errors. In addition, the WHO Global Patient Safety Action Plan 2021–2030 stated that collaborative leadership is an important factor in developing a patient safety culture in healthcare facilities.

Nationally, the Ministry of Health of the Republic of Indonesia, through Minister of Health Regulation No. 40 of 2017 concerning Interprofessional Collaboration Practice (IPCP), emphasizes the importance of collaborative team-based healthcare services across professions. Nevertheless, various reports indicate that the quality of interprofessional collaboration in hospitals remains suboptimal. Basic Health Research (Risksdas, 2018) reported that delays in hospital medical services are partly caused by miscommunication among healthcare workers. Previous studies also demonstrated that the leadership style of head nurses is positively associated with team collaboration quality and healthcare workers' job satisfaction (Putri et al., 2022; Sari et al., 2023).

Based on these phenomena, transformational leadership of head nurses is considered to have an important role in improving the quality of interprofessional collaboration in inpatient wards. Therefore, this study aimed to analyze the effect of transformational leadership of head nurses on the quality of interprofessional collaboration in hospital inpatient wards.

METHOD

This study used a quantitative design with a quasi-experimental approach through a non-equivalent control group design to analyze the effect of transformational leadership of head nurses on the quality of interprofessional collaboration (IPC) among staff nurses in hospital inpatient wards. The study involved two groups: an intervention group that received transformational leadership training and supervision for one month and a control group that did not receive the intervention. IPC quality measurements were conducted before the intervention (pretest) and after the intervention (posttest) in both groups using structured Likert-scale instruments. The study was conducted among staff nurses in inpatient wards with a total sample of 50 respondents, consisting of 25 respondents in the intervention group and 25 respondents in the control group. Purposive sampling was used according to the predetermined inclusion and exclusion criteria.

Data collection was conducted through direct and online questionnaire distribution using Google Forms coordinated by unit key persons. The research instruments consisted of a transformational leadership questionnaire and the Interprofessional Collaboration instrument based on PINCOM-Q, both of which have been tested for validity and reliability. The validity test showed that all questionnaire items had r-count values greater than the r-table value (0.361), indicating that all items were valid. Reliability testing demonstrated Cronbach's Alpha values of 0.912 for the transformational leadership instrument and 0.894 for the PINCOM-Q instrument, indicating excellent reliability. Data were analyzed using univariate analysis to describe respondent characteristics, bivariate analysis using the independent t-test to compare differences between intervention and control groups, and multivariate analysis using General Linear Model Repeated Measure (GLM-RM) to assess changes in IPC scores before and after the intervention. If the data were not normally distributed, the Friedman nonparametric test was used as an alternative analysis.

RESULT

Table 1, the majority of respondents in both the intervention and control groups were female. Most respondents in the intervention group had a Diploma III (D3) in Nursing education, whereas the majority of respondents in the control group had a Bachelor's degree (S1) in Nursing.

Table 1.
Distribution of Respondents by Gender and Education (n=50)

Variables		f	%
Intervention Group			
Gender	Man	1	4.0
	Woman	24	96.0
Education	D3 Nursing	20	80.0
	S1 Nursing	5	20.0
	Specialist Masters	0	0
Control Group			
Gender	Man	3	12.0
	Woman	22	88.0
Education	D3 Nursing	11	44.0
	S1 Nursing	13	52.0
	Specialist Masters	1	4.0

Table 2.
Distribution of Respondents Based on Age and Length of Service (n=50)

Group	Variables	Mean	Median	Standard Deviation
Intervention (n = 25)	Age (years)	29.96	29.00	5.09
	Length of Service (years)	9.16	7.00	9.19
Control (n = 25)	Age (years)	30.64	30.00	4.07
	Length of Service (years)	7.80	7.00	7.05

Table 2, the average age of respondents in the intervention group was 29.96 years with a median of 29.00 years and a standard deviation of 5.09. In the control group, the average age of respondents was 30.64 years with a median of 30.00 years and a standard deviation of 4.07. The length of service of respondents in the intervention group had an average of 9.16 years with a median of 7.00 years, while in the control group the average length of service was 7.80 years with a median of 7.00 years.

Table 3.
Description of Transformational Leadership (n=50)

Group	Measurement	Mean	Median	Standard Deviation
Intervention	Pre	139.84	175.00	14.95
	p1	170.12	175.00	11.24
	p2	172.60	175.00	10.63
	p3	174.40	177.00	9.60
	p4	174.36	177.00	9.67
	p5	179.64	182.00	7.85
Control	Pre	138.96	137.00	13.06
	p1	139.24	137.00	12.65
	p2	139.64	137.00	12.63
	p3	139.48	138.00	12.96
	p4	139.32	137.00	12.70
	P5	139.64	138.00	11.85

Table 3, the intervention group showed a gradual increase in the mean transformational leadership score from an initial value of 139.84 to 179.64 on the p5 measurement. Furthermore, there was an increase in the median and a decrease in the standard deviation, indicating that the increase in scores was more evenly distributed among respondents after the intervention. In contrast, in the control group, the mean transformational leadership score tended to be stable from the initial measurement to p5, with very minimal changes in the median and standard deviation.

Table 4.
Overview of Interprofessional Collaboration (n=50)

Group	Measurement	Mean	Median	Standard Deviation
Intervention	Pre	62.56	70.00	8.53
	p1	66.32	70.00	7.39
	p2	67.00	70.00	7.02
	p3	68.16	71.00	6.41
	p4	68.72	71.00	6.44
	p5	71.80	74.00	5.05
Control	Pre	62.16	61.00	8.72
	p1	62.16	61.00	8.72
	p2	62.60	61.00	8.38
	p3	62.80	62.00	8.51
	p4	62.12	61.00	8.54
	P5	62.68	60.00	8.05

Table 4, the intervention group showed a gradual increase in the mean Interprofessional Collaboration (IPC) score from 62.56 at baseline to 71.80 at p5. This increase was accompanied by an increase in the median and a decrease in the standard deviation, indicating that the quality of interprofessional collaboration improved and became more consistent after the intervention. In contrast, the control group showed a relatively stable mean IPC score throughout the measurement period, with minimal changes in the median and data variation.

Table 5.
Results of Mauchly's Test of Sphericity

Mauchly's W	Sig.	Information
0.008	0.000	Significant

Table 5, the Mauchly's W value was 0.008 with a significance value of 0.000 ($p < 0.05$). This indicates that there is a difference in variance between the measurement time combinations, so the sphericity assumption is not met.

Table 6.
Differences in Transformational Leadership Before and After (n=50)

Effect	Test Statistics	Value	F	Sig.	Partial Eta Squared
Intervention	Pillai's Trace	0.349	4,728 ^a	0.002	0.349
	Wilks' Lambda	0.651	4,728 ^a	0.002	0.349
	Hotelling's Trace	0.537	4,728 ^a	0.002	0.349
	Roy's Largest Root	0.537	4,728 ^a	0.002	0.349
Control	Pillai's Trace	0.029	0.261 ^a	0.932	0.029
	Wilks' Lambda	0.971	0.261 ^a	0.932	0.029
	Hotelling's Trace	0.030	0.261 ^a	0.932	0.029
	Roy's Largest Root	0.030	0.261 ^a	0.932	0.029

Table 6, all multivariate statistical tests in the intervention group showed significant results with a p-value of 0.002 ($p < 0.05$). These results indicate a difference in transformational leadership before and after the intervention in the intervention group. In contrast, no significant changes were found in the control group ($p = 0.932$).

Table 7.
Comparison of Transformational Leadership Before and After Between Intervention and Control Groups (n=50)

Source	Time Comparison	Mean Square	F	Sig.	Partial Eta Squared
Transformational Leadership	p2 vs p1	13,513,680	94,347	<0.001	0.663
	p3 vs p1	13,579,520	99,670	<0.001	0.675
	p4 vs p1	15,242,580	117,171	<0.001	0.709
	p5 vs p1	15,347,520	120,507	<0.001	0.715
	p6 vs p1	20,000,000	198,121	<0.001	0.805
Transformational Leadership × Group	p2 vs p1	13,513,680	94,347	<0.001	0.663
	p3 vs p1	13,579,520	99,670	<0.001	0.675
	p4 vs p1	15,242,580	117,171	<0.001	0.709
	p5 vs p1	15,347,520	120,507	<0.001	0.715
	p6 vs p1	20,000,000	198,121	<0.001	0.805
Error (Transformational Leadership)	p2 vs p1	197,048			
	p3 vs p1	143,233			
	p4 vs p1	136,245			
	p5 vs p1	130,088			
	p6 vs p1	100,948			

Table 7, a p-value of <0.001 was obtained for all time comparisons, indicating a significant increase in transformational leadership after the intervention, especially in the follow-up measurements.

Table 8.
General Linear Model Repeated Measure Analysis of Transformational Leadership (n=50)

Source	F	Sig.	Partial Eta Squared
Intercept	1	7357381,203	9982,408
Group	1	88992,963	120,745
Error	48	737,035	

Based on Table 8, the p-value for the group factor is <0.001 (p<0.05). This indicates a significant difference in transformational leadership between the intervention and control groups.

Table 9.
Differences in the Quality of Interprofessional Collaboration Before and After (n=50)

Effect	Test Statistics	Value	F	Sig.	Partial Eta Squared
Intervention	Pillai's Trace	0.281	3,445 ^a	0.010	0.281
	Wilks' Lambda	0.719	3,445 ^a	0.010	0.281
	Hotelling's Trace	0.391	3,445 ^a	0.010	0.281
	Roy's Largest Root	0.391	3,445 ^a	0.010	0.281
	Pillai's Trace	0.268	3,223 ^a	0.015	0.268
Control	Wilks' Lambda	0.732	3,223 ^a	0.015	0.268
	Hotelling's Trace	0.366	3,223 ^a	0.015	0.268
	Roy's Largest Root	0.366	3,223 ^a	0.015	0.268
	Pillai's Trace	0.281	3,445 ^a	0.010	0.281
	Wilks' Lambda	0.719	3,445 ^a	0.010	0.281

Table 9, all multivariate statistical tests showed significant results in the intervention group (p=0.010). These results indicate an increase in the quality of interprofessional collaboration after the intervention.

Table 10.
Comparison of Interprofessional Collaboration Quality Before and After Between Intervention and Control Groups (n=50)

Source	Time Comparison	Mean Square	F	Sig.	Partial Eta Squared
Quality of Interprofessional Collaboration	p2 vs p1	216,320	3,312	0.075	0.065
	p3 vs p1	242,000	4,050	0.050	0.078
	p4 vs p1	359,120	6,320	0.015	0.116
	p5 vs p1	544,500	9,526	0.003	0.166
	p6 vs p1	1,039,680	23,025	<0.001	0.324
IPC Quality × Group	p2 vs p1	216,320	3,312	0.075	0.065
	p3 vs p1	242,000	4,050	0.050	0.078
	p4 vs p1	359,120	6,320	0.015	0.116
	p5 vs p1	544,500	9,526	0.003	0.166
	p6 vs p1	1,039,680	23,025	<0.001	0.324
Error (IPC Quality)	p2 vs p1	74,407			
	p3 vs p1	59,750			
	p4 vs p1	56,820			
	p5 vs p1	57,160			
	p6 vs p1	45,155			

Table 10, the quality of Interprofessional Collaboration showed a significant increase starting from measurements p4 to p6 compared to before the intervention.

Table 11.
General Linear Model Repeated Measure Analysis of Interprofessional Collaboration Quality (n=50)

Source	Mean Square	F	Sig.	Partial Eta Squared
Intercept	1274269,013	1	1274269,013	4226,120
Group	2274,253	1	2274,253	7,543
Error	14473,067	48	301,522	

Table 11, a p-value of 0.008 ($p < 0.05$) was obtained, indicating a significant difference in the quality of Interprofessional Collaboration between the intervention and control groups. The F-value of 7.543 indicates the intervention's effect on improving the quality of IPC.

DISCUSSION

The results of this study showed a significant improvement in transformational leadership in the intervention group compared to the control group after supervision and transformational leadership reinforcement were implemented. The mean transformational leadership score in the intervention group increased from 139.84 at baseline to 179.64 at the final measurement, while the control group remained relatively stable. Multivariate analysis showed a significant result ($p = 0.002$) with a Partial Eta Squared value of 0.349, indicating a moderate to large effect size. These findings suggest that supervision interventions were effective in improving head nurses' abilities to provide motivation, inspiration, individualized consideration, and intellectual stimulation to nursing staff. This finding is consistent with recent studies showing that transformational leadership positively influences nurses' work engagement, job satisfaction, and organizational performance (Boamah et al., 2022; Specchia et al., 2021).

The improvement in transformational leadership in the intervention group occurred progressively across each follow-up measurement. Significant differences were observed from p4 to p6 with $p < 0.001$, while the Partial Eta Squared value increased to 0.805 at the final measurement. This indicates that the effects of supervision were progressive and required an adaptation process before producing optimal leadership behavior changes. In contrast, the control group showed no significant changes ($p = 0.932$) with a very small effect size (0.029). These findings indicate that

transformational leadership tends to remain stagnant without structured supervision and mentoring. Recent evidence also suggests that continuous mentoring and leadership coaching are essential for strengthening transformational leadership competencies among nurse managers (Wei et al., 2023).

The General Linear Model Repeated Measure analysis demonstrated a significant group effect on transformational leadership with $F = 120.745$ and $p < 0.001$. The trend graph illustrated a consistent increase in the intervention group, whereas the control group remained stable during the observation period. These findings indicate that nursing supervision serves as an effective strategy for improving head nurses' leadership quality. Theoretically, this study supports the transformational leadership theory developed by Bernard M. Bass and Bruce J. Avolio, which includes idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. The supervision conducted during this study strengthened these dimensions, enabling head nurses to establish more positive working relationships with nursing staff. Similar findings were reported by Cummings et al. (2021), who stated that transformational leadership significantly contributes to better nursing outcomes and healthier work environments.

In addition to improving transformational leadership, the intervention also significantly enhanced the quality of Interprofessional Collaboration (IPC). The mean IPC score in the intervention group increased from 62.56 at baseline to 71.80 at the final measurement, whereas the control group experienced only minor changes and remained relatively stable. Multivariate analysis showed a significant result ($p = 0.010$) with a Partial Eta Squared value of 0.281, indicating the intervention's effect on IPC improvement. These findings suggest that supervision and transformational leadership strengthening improved communication, coordination, and teamwork among healthcare professionals in inpatient wards. Recent studies also found that leadership support and structured supervision improve collaborative practice and communication effectiveness among multidisciplinary healthcare teams (Schot et al., 2024; Wei et al., 2022).

The improvement in IPC quality became more evident from p4 to p6, with $p < 0.001$ at the final measurement. The Partial Eta Squared value also increased to 0.324, indicating that the intervention effect strengthened over time. This finding suggests that changes in collaborative culture require a gradual process of learning and adaptation. Conversely, the control group showed lower improvement despite minor changes during the observation period. Recent evidence suggests that interprofessional collaboration cannot be optimally achieved without supportive leadership, organizational commitment, and continuous communication training among healthcare workers (Reeves et al., 2023). Therefore, the intervention applied in this study proved to strengthen collaboration quality among healthcare professionals more effectively than in the non-intervention group.

The General Linear Model Repeated Measure analysis also showed that the group factor significantly influenced IPC quality with $F = 7.543$ and $p = 0.008$. The graph demonstrates a consistent increase in IPC scores in the intervention group, while the control group remained relatively stable. These findings indicate that supervision and transformational leadership reinforcement function as catalysts in improving healthcare team collaboration. Overall, this study demonstrates that nursing supervision interventions are effective in sustainably improving transformational leadership and the quality of Interprofessional Collaboration. Therefore, nursing supervision and transformational leadership development can be considered important strategies for improving healthcare service quality, patient safety, and nursing care quality in hospitals.

CONCLUSION

Supervision and transformational leadership reinforcement were effective in improving transformational leadership among head nurses and the quality of interprofessional collaboration among staff nurses in hospital inpatient wards.

REFERENCES

- Abdullatif Ibrahim., et al. (2023). The long-term effect of clinical supervision on transformational leadership in nursing practice. *BMC Nursing* , 22(1), 145.
- Boamah et al. 2022 transformational leadership study Boamah, S. A., et al. (2022). Transformational leadership and job satisfaction among nurses: The mediating role of structural empowerment. *Journal of Advanced Nursing*, 78(2), 421–432.
- Bond, Carol., et al. (2024). Nursing leadership development and transformational leadership outcomes in clinical settings. *Journal of Advanced Nursing* , 80(2), 455–467.
- Canadian Interprofessional Health Collaborative. (2010). A national interprofessional competency framework . CIHC Official Website
- Carron, Thomas., et al. (2021). Interprofessional collaboration in healthcare: Effects on patient care and professional practice. *Journal of Interprofessional Care* , 35(4), 542–550.
- Cummings et al. 2021 leadership outcomes study Cummings, G. G., et al. (2021). Leadership styles and outcome patterns for the nursing workforce and work environment: A systematic review. *International Journal of Nursing Studies*, 117, 103887.
- Kanninen, Tarja., et al. (2021). Transformational leadership in nursing management and patient safety: A systematic review. *Journal of Nursing Management* , 29(5), 1059–1068. <https://doi.org/10.1111/jonm.13236>
- Leadership Roles and Management Functions in Nursing: Theory and Application
- Marquis, Bessie L., & Huston, Carol J.. (2020). Leadership roles and management functions in nursing: Theory and application (10th ed.). Lippincott Williams & Wilkins.
- Ministry of Health of the Republic of Indonesia. (2017). Regulation of the Minister of Health of the Republic of Indonesia Number 40 of 2017 concerning the Development of Professional Career Paths for Clinical Nurses . Ministry of Health of the Republic of Indonesia
- Ministry of Health of the Republic of Indonesia. (2018). Basic Health Research (Riskesdas) 2018. Riskesdas 2018
- Multifactor Leadership Questionnaire (MLQ) Manual Bass, Bernard M., & Avolio, Bruce J.. (2004). Multifactor Leadership Questionnaire (MLQ) manual . Mind Garden Inc.
- Price, Sarah., et al. (2025). Organizational culture and sustainability of interprofessional collaboration in hospitals. *BMC Health Services Research* , 25(1), 88.
- Putri, RA., Suryani, D., & Kurnia, R. (2022). Transformational leadership and teamwork among nurses: A correlational study. *Indonesian Nursing Journal*, 25 (1), 15–23. <https://doi.org/10.7454/jki.v25i1.1310>
- Quantitative, Qualitative, and R&D Research Methods
- Sugiyono. (2019). Quantitative, Qualitative, and R&D Research Methods . Alfabeta.
- Reeves et al. 2023 collaborative practice study Reeves, S., et al. (2023). Interprofessional collaboration to improve professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews*, 2023(4), 1–45.
- Reeves, Scott., et al. (2017). Interprofessional collaboration to improve professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews* , 6(6), CD000072. <https://doi.org/10.1002/14651858.CD000072.pub3>
- Reeves, Scott., et al. (2018). Interprofessional teamwork for health and social care . Wiley-Blackwell.
- Research Design: Qualitative, Quantitative, and Mixed Methods Approaches
- Creswell, John W.. (2014). Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.). SAGE Publications.
- Sanga, ES., et al. (2020). Structured collaborative interventions and interprofessional teamwork effectiveness. *International Journal of Integrated Care* , 20(3), 12.
- Sari, LM., Rahman, F., & Handayani, Y.. (2023). Leadership style and nurse collaboration in inpatient wards. *International Journal of Nursing Practice*, 29 (2), e13103. <https://doi.org/10.1111/ijn.13103>

- Schot et al. 2024 teamwork collaboration study Schot, E., et al. (2024). Interprofessional teamwork and collaboration in healthcare: Implications for quality of care. *BMC Health Services Research*, 24(1), 1–11.
- Schot, Esther., et al. (2020). The importance of leadership in interprofessional collaboration in healthcare teams. *Medical Education* , 54(7), 641–649.
- Specchia et al. 2021 nursing leadership review Specchia, M. L., et al. (2021). Leadership styles and nurses' job satisfaction. Results of a systematic review. *International Journal of Environmental Research and Public Health*, 18(4), 1552.
- Takemura, Y., et al. (2022). Effectiveness of nursing supervision on transformational leadership among nurse managers. *Nurse Leader* , 20(4), 310–316.
- Umstattd Meyer, MR., et al. (2025). Sustainability of collaborative interventions in healthcare organizations. *Journal of Healthcare Leadership* , 17, 55–66.
- Wei et al. 2022 interprofessional collaboration study Wei, H., et al. (2022). Interprofessional collaboration and patient care outcomes in healthcare settings. *Journal of Nursing Management*, 30(6), 1805–1813.
- Wei et al. 2023 leadership coaching study Wei, H., et al. (2023). The effectiveness of leadership coaching and supervision in improving nurse manager competencies. *Journal of Nursing Management*, 31(5), 1045–1053.
- World Health Organization. (2010). Framework for action on interprofessional education and collaborative practice . WHO Official Website
- World Health Organization. (2021). Global patient safety action plan 2021–2030 . WHO Official Website

