

Patient Safety Culture, Transformational Leadership, and Employee Safety Behavior: Evidence from A Primary Healthcare Facility in Indonesia

Sessika Yunisa, Nurdin, Titik Respati

Magister of Management Study Program, Faculty of Economics and Business, Universitas Islam Bandung

ABSTRACT

Patient safety in primary healthcare depends not only on formal safety procedures but also on the organizational environment and leadership that shape employees' safety-related behavior. This study examined the relationship of patient safety culture and transformational leadership with employee safety behavior at UPTD Puskesmas Cipadung, Bandung, Indonesia. A quantitative cross-sectional study was conducted in 2026 using total population sampling involving all 39 employees of the health center. Data were collected using structured questionnaires measuring patient safety culture, transformational leadership, and employee safety behavior on a four-point Likert scale. Data were analyzed using descriptive statistics, Cronbach's alpha, Spearman correlation, and multiple linear regression. The findings showed that patient safety culture was perceived as very high (mean = 3.83), transformational leadership was very high (mean = 3.84), and employee safety behavior was very high (mean = 3.86). Incident reporting had the highest mean among the patient safety culture dimensions (3.88), while intellectual stimulation was the highest transformational leadership dimension (3.87). Employee safety behavior showed similarly high levels of safety compliance (3.86) and safety participation (3.85). Multiple linear regression showed that patient safety culture had a positive and significant effect on employee safety behavior ($\beta = 0.620$; $p < 0.001$), while transformational leadership also had a positive and significant effect ($\beta = 0.516$; $p = 0.001$). The regression model was statistically significant ($F = 64.828$; $p < 0.001$) and explained 78.3% of the variance in employee safety behavior ($R^2 = 0.783$). Patient safety culture demonstrated the stronger relative contribution, although transformational leadership also made a significant independent contribution. These findings indicate that employee safety behavior in primary healthcare is associated with both a supportive patient safety culture and transformational leadership. Strengthening safety culture through open communication, incident reporting, teamwork, organizational learning, and employee participation, together with leadership that encourages motivation and problem solving, may support the sustainability of safe practices in primary healthcare.

Keywords: Patient Safety Culture; Transformational Leadership; Employee Safety Behavior; Primary Healthcare; Community Health Center; Indonesia

Corresponding author

Name: Sessika Yunisa

Email: sessika_yunisa@proton.me

INTRODUCTION

Patient safety is a core dimension of healthcare quality and a global health priority. The World Health Organization (WHO), through the Global Patient Safety Action Plan 2021–2030, calls for healthcare systems to reduce avoidable harm by strengthening organizational cultures, processes, behaviors, and learning systems at every level of care (WHO, 2021). Globally, approximately one in ten patients is estimated to experience harm during healthcare delivery, with a substantial proportion of these events considered preventable (WHO, 2019, 2023). These figures demonstrate that patient safety is not solely a clinical issue but a system-level challenge requiring coordinated action across organizational structures, leadership, and employee behavior.

Although high-acuity hospital care has attracted much of the patient-safety literature, primary healthcare also involves multiple processes through which preventable harm can occur, including medication management, diagnostic decision-making, referrals, handovers, infection prevention, documentation, and longitudinal coordination. The diversity and continuity of services provided in primary care create safety risks that may be less visible than those in hospitals but remain consequential for patients. Evidence from primary healthcare indicates that safety incidents can involve diagnostic errors, medication errors, communication failures, and delays in treatment or referral. These risks may be amplified where workloads are high, human resources are limited, and coordination among healthcare professionals is complex. Accordingly, patient safety in primary healthcare requires not only formal policies and procedures but also consistent safety practices among employees.

Patient safety culture represents an important organizational foundation for such practices. It refers to the shared values, norms, expectations, perceptions, and practices that shape how an organization recognizes, communicates about, and manages safety risks. Common dimensions include management support for safety, teamwork, communication openness, organizational learning, incident reporting, and non-punitive responses to error (Agency for Healthcare Research and Quality (AHRQ), 2021). A systematic review of primary healthcare concluded that assessing safety culture is an important first step in identifying organizational vulnerabilities and developing targeted improvement strategies (Churrua et al., 2021). However, safety-culture research in primary care remains heterogeneous with respect to measurement instruments, organizational contexts, and dimensions assessed (Nuria & Dhamanti, 2023). This variation indicates the importance of examining safety culture within specific primary healthcare environments rather than assuming that findings from hospital settings can be directly generalized to primary care.

A particularly important feature of patient safety culture is the extent to which employees perceive that safety concerns can be communicated openly and that errors can be reported without fear of blame or punishment. A non-punitive response to error can encourage healthcare workers to report incidents, near misses, and potential hazards, thereby providing organizations with information for learning and system improvement. Conversely, a blaming environment may suppress reporting and limit opportunities to identify underlying system weaknesses (Alsobou et al., 2025). Consequently, the

effectiveness of incident reporting depends not only on the existence of formal reporting mechanisms but also on the organizational culture surrounding error, communication, and learning.

These organizational characteristics are particularly relevant to employee safety behavior. Safety behavior refers to the actions through which employees contribute to safe healthcare delivery and can be understood through two complementary dimensions: safety compliance and safety participation (Neal & Griffin, 2002, 2006). Safety compliance involves adherence to procedures, safety standards, and required protective practices, whereas safety participation encompasses discretionary behaviors such as reporting hazards, offering suggestions for improvement, supporting safety initiatives, and actively contributing to organizational safety. Thus, safety behavior extends beyond merely following established procedures; it also reflects employees' willingness to participate in the continuous development of a safer work environment.

Evidence from Indonesian primary healthcare facilities indicate that patient safety practices remain inconsistent. Studies have identified continuing challenges related to incident reporting, communication, staffing, workload, and non-punitive responses to mistakes (Dhamanti et al., 2022; Guspianto et al., 2025). Previous studies in Puskesmas have also reported that patient safety implementation and incident reporting are present but not yet optimal. Some evidence suggests that approximately 60–65% of healthcare workers demonstrate relatively good safety-related behavior, while other findings indicate that safety implementation remains largely procedural and has not been fully internalized as an organizational culture. Motivation, workload, and individual capacity have also been associated with patient safety practices (Adeyemi et al., 2024; Salsabila & Dhamanti, 2023; Wahyuda et al., 2024). These findings suggest a continuing gap between formal patient safety standards and their consistent enactment through employee behavior.

The Indonesian primary healthcare system is organized around Puskesmas, or community health centers, which combine individual clinical care with population-based public health functions. Under Minister of Health Regulation No. 19 of 2024, Puskesmas provide first-level individual and public health services, with an emphasis on promotive and preventive interventions while maintaining curative and rehabilitative functions. This broad mandate requires collaboration among physicians, nurses, midwives, pharmacists, public health professionals, and other healthcare workers. The resulting diversity of services and professional roles increases the importance of effective communication, teamwork, coordination, and adherence to safety procedures (Nasution et al., 2025).

Leadership is another organizational factor that may shape how patient safety priorities are translated into routine employee behavior. Healthcare leaders influence organizational direction, employee commitment, communication, teamwork, and the extent to which safety is prioritized in everyday work. Transformational leadership is particularly relevant because it emphasizes articulating a shared vision, acting as a role model, motivating employees, stimulating problem solving and innovation, and providing individualized support (Bass & Riggio, 2006). Studies across hospitals, nursing homes, and home-care services have associated transformational leadership with stronger safety

culture, employee engagement, and safety practices (Amallia et al., 2024; Ana et al., 2023; Azyabi et al., 2021; Hamdan et al., 2024). Its relevance has also been examined among employees in Indonesian clinic and laboratory settings (Noor Arzahan et al., 2022; Roghani et al., 2023), while recent syntheses identify leadership as an important influence on teamwork, communication, organizational learning, and perceptions of safety (Camacho-Rodríguez et al., 2022).

In primary healthcare, transformational leadership may be particularly important because safety depends on coordination across professional and programmatic boundaries. The head of a Puskesmas has a strategic role in communicating organizational priorities, motivating employees, supporting problem solving, and creating conditions for learning and improvement. Leadership that demonstrates commitment to patient safety may encourage employees to comply with safety requirements while also participating actively in safety improvement. Conversely, limitations in communication, coordination, or organizational support may weaken employees' willingness to report risks and engage in safety initiatives. Thus, leadership may operate both directly through employee motivation and indirectly by shaping the organizational environment in which safety behavior occurs (Huang et al., 2024).

Importantly, patient safety culture and transformational leadership are conceptually intertwined rather than completely independent organizational characteristics. Management support for safety is itself a component of many patient safety culture instruments, while employees may experience leadership primarily through organizational systems, communication patterns, teamwork, responses to error, and opportunities for learning. Consequently, leadership and safety culture may capture overlapping aspects of the organizational environment (Huang et al., 2024). Treating the two constructs as entirely independent predictors could therefore overstate their distinct contributions to employee safety behavior. Empirical research that examines both constructs simultaneously is needed to determine whether transformational leadership provides explanatory value beyond the broader safety culture experienced by employees, particularly in primary healthcare and lower- and middle-income settings.

This issue is relevant to UPTD Puskesmas Cipadung, a community health center in Cibiru District, Bandung, West Java, Indonesia. The facility provides a range of primary healthcare services, including general medical care, maternal and child health services, dental care, basic laboratory services, pharmacy services, and promotive and preventive programs conducted both inside and outside the facility. These activities require collaboration among multiple healthcare professions and consistent implementation of safety practices, including accurate patient identification, effective referral communication, appropriate medication administration, accurate medical documentation, hand hygiene, and incident reporting.

The operational context of UPTD Puskesmas Cipadung further illustrates the importance of examining organizational factors associated with employee safety behavior. Monitoring and evaluation data indicate that several program indicators had not reached their intended targets. Antenatal care coverage (K6) was approximately 59.4%, measles

BIAS immunization coverage approximately 74.1%, and realization of program expenditure approximately 77.06%. Community participation in several health programs remained suboptimal, human resources were reported as limited, and cross-sectoral coordination required further strengthening. At the same time, several programs, including Universal Child Immunization, early disease surveillance, and integrated disease surveillance, had achieved their targets. This combination of successful program implementation and persistent operational gaps reflects the complex environment in which employees must maintain consistent safety practices.

The combination of limited human resources, multiple simultaneous programs, multidisciplinary collaboration, and incomplete achievement of several program targets may create challenges for employee safety behavior. Such conditions can affect communication, coordination, workload distribution, adherence to standard operating procedures, and participation in safety reporting and improvement activities. In this context, safety culture becomes particularly important because it determines whether employees perceive safety as a shared organizational priority and whether they feel supported in identifying and communicating risks. Leadership may further shape these perceptions by establishing expectations, demonstrating commitment, encouraging collaboration, and supporting learning from errors.

Despite increasing attention to patient safety, important gaps remain in the literature. First, patient safety research continues to be disproportionately concentrated in hospital settings, while evidence from primary healthcare facilities, particularly Puskesmas in Indonesia, remains comparatively limited. Second, previous research has often examined patient safety culture or leadership separately, whereas fewer studies have simultaneously examined patient safety culture and transformational leadership in relation to employee safety behavior. Third, much of the existing research emphasizes safety culture, patient safety implementation, or perceptions of service quality, while employee safety behavior, particularly the combined dimensions of safety compliance and safety participation, has received comparatively less attention as an outcome.

Furthermore, the potential overlap between safety culture and transformational leadership represents an important empirical issue. If leadership is largely experienced through organizational systems, communication, management support, and responses to safety concerns, its apparent association with employee safety behavior may partly reflect the broader safety culture. Examining the two constructs simultaneously can therefore clarify whether transformational leadership contributes additional explanatory value after patient safety culture is taken into account. This question is particularly relevant in primary healthcare settings, where organizational resources may be constrained and leadership practices are closely embedded within day-to-day service delivery.

Therefore, this study examined patient safety culture, transformational leadership, and employee safety behavior among employees of UPTD Puskesmas Cipadung, Bandung, Indonesia. Specifically, the study aimed to describe the levels of the three constructs, assess their bivariate relationships, and explore whether transformational leadership explained additional variation in employee safety behavior beyond patient safety culture. By

addressing these objectives, the study seeks to contribute evidence on the organizational foundations of safety behavior in primary healthcare and to clarify the respective roles of safety culture and transformational leadership in an Indonesian community health center.

METHOD

Study design and setting

This study employed a quantitative, cross-sectional survey design and was conducted in 2026 at UPTD Puskesmas Cipadung, a public community health center in Bandung, West Java, Indonesia. The facility provides a combination of clinical, preventive, and community-based health services. Its service activities involve multiple professional groups working across clinical and public health programs, providing an appropriate setting for examining organizational factors associated with employee safety behavior. The study was reported in accordance with the principles of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline for cross-sectional studies (Grech & Eldawlatly, 2023).

Participants and data collection

A total population sampling approach was used. All 39 staff members involved in clinical or service-support activities at UPTD Puskesmas Cipadung were invited to participate, and all invited staff completed the questionnaire, resulting in a census of the eligible workforce. The respondents represented a range of occupational groups, including physicians, nurses, midwives, pharmacists and pharmacy staff, laboratory personnel, public-health staff, medical-record staff, and non-health support personnel. Data were collected using a structured questionnaire administered in an offline format. Participation was voluntary, and participants provided informed consent before completing the questionnaire. No personally identifying information was collected, and responses were treated as anonymous. Data were analyzed in aggregate to protect participant confidentiality.

Measures

Patient safety culture was assessed using 12 items adapted from the Agency for Healthcare Research and Quality (AHRQ) patient safety culture framework, with the adaptation informed by previous research conducted in the Indonesian healthcare context (AHRQ, 2021; Suryani et al., 2022). The items represented three broad domains: (1) leadership commitment and organizational learning, (2) open communication and teamwork, and (3) incident reporting and non-punitive responses to errors.

Transformational leadership was measured using nine items based on the four dimensions of transformational leadership described by Bass & Riggio (2006): idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. The items assessed employees' perceptions of leadership behaviors demonstrated within the healthcare facility.

Employee safety behavior was assessed using six items based on the framework developed by Neal & Griffin (2002). The measure comprised two dimensions: safety compliance and safety participation, with three items representing each dimension. Safety compliance reflected adherence to required safety procedures and practices, whereas safety participation reflected discretionary involvement in activities that support and improve organizational safety.

All items across the three measures were rated on a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). A four-point scale was used without a neutral midpoint to encourage respondents to indicate the direction of their perceptions. The instruments underwent language and contextual adaptation for the Puskesmas setting and were subjected to content review before administration.

For each construct, a composite score was calculated as the arithmetic mean of its constituent items, retaining the original 1–4 response metric. Higher scores represented more favorable perceptions of patient safety culture and transformational leadership and more favorable employee safety behavior.

Statistical analysis

All statistical analyses were performed using IBM SPSS Statistics. Participant characteristics were summarized using frequencies and percentages. Descriptive statistics for the study variables included means, standard deviations, and observed score ranges. Internal consistency of each scale was assessed using Cronbach's alpha. Because the responses were concentrated toward the upper end of the four-point response scales, Spearman's rank-order correlation was used to examine the bivariate associations among patient safety culture, transformational leadership, and employee safety behavior. All statistical tests were two-sided, with statistical significance set at $p < 0.05$.

An exploratory hierarchical linear regression analysis was conducted to examine the additional explanatory contribution of transformational leadership to employee safety behavior after accounting for patient safety culture. In Model 1, patient safety culture was entered as the predictor of employee safety behavior. Transformational leadership was subsequently added in Model 2 to determine whether it explained additional variance beyond patient safety culture. The change in the coefficient of determination (ΔR^2) between the two models was examined to assess the incremental explanatory contribution of transformational leadership. Potential multicollinearity between patient safety culture and transformational leadership was assessed using the Pearson correlation coefficient, tolerance, and variance inflation factor (VIF). Given the census design, small number of respondents, concentration of responses toward the upper end of the scales, and reliance on self-reported measures, the multivariable analysis was interpreted as exploratory and associative rather than causal. No causal inference was made from the cross-sectional data.

RESULTS

Participants Characteristics

The composition of the study population provides important context for interpreting the findings. The predominance of women is consistent with the multidisciplinary nature of the Puskesmas workforce, where nursing, midwifery, pharmacy, and other health-service roles constitute an important part of routine service delivery. However, because the study used a census of a single facility rather than a probabilistic sample, the observed sex distribution should be interpreted as a characteristic of the participating workforce rather than as evidence of sex-related differences in safety behavior.

Table 1. Participant Characteristics

Characteristic	Category	n (%)
Sex	Women	30 (76.9)
	Men	9 (23.1)
Age	21–25 years	7 (17.9)
	26–30 years	19 (48.7)
	31–35 years	8 (20.5)
	>35 years	5 (12.8)
Education	Secondary school	9 (23.1)
	Diploma	21 (53.8)
	Bachelor/professional	9 (23.1)
Tenure	<1 year	8 (20.5)
	1–3 years	15 (38.5)
	4–6 years	7 (17.9)
	7–9 years	5 (12.8)
	>10 years	4 (10.3)
Occupational group	Physicians/dentists	5 (12.8)
	Nurses/midwives	13 (33.3)
	Pharmacy/laboratory staff	7 (17.9)
	Other health/public-health staff	5 (12.8)
	Non-health support personnel	9 (23.1)

Percentages may not total exactly 100% because of rounding.

The age and tenure profiles suggest that the workforce was relatively concentrated in early to mid-career employees. Nearly half of the respondents were aged 26–30 years, while the largest tenure category was 1–3 years. This combination indicates that a substantial proportion of employees had entered the workforce relatively recently or had relatively limited organizational tenure. Such a profile is relevant to patient safety because familiarity with organizational procedures, communication patterns, reporting mechanisms, and informal workplace norms develops through both professional

experience and exposure to a specific organizational environment. In this context, employees' perceptions of patient safety culture may reflect not only their individual professional knowledge but also their degree of socialization into the safety practices of the health center.

The educational profile was predominantly diploma-level, with a smaller proportion holding bachelor/professional qualifications. This distribution reflects the heterogeneous occupational structure of primary healthcare, where different professional and support roles contribute to service delivery. Importantly, the presence of employees with different educational and occupational backgrounds means that patient safety is not exclusively dependent on the clinical decision-making of physicians or other highly qualified professionals. Safety also depends on coordination, documentation, communication, medication processes, laboratory activities, administrative support, and other interconnected tasks. The inclusion of non-health support personnel in the census therefore broadens the assessment of safety behavior from narrowly clinical practice to the wider organizational workforce.

The occupational distribution further demonstrates the multidisciplinary character of the setting. Nurses and midwives constituted the largest health-professional group, while pharmacy/laboratory personnel, physicians/dentists, public-health staff, and non-health support personnel were also represented. This diversity is particularly relevant to the study because patient safety in primary healthcare is produced through interdependent work processes rather than by a single professional group. Communication across occupational boundaries, teamwork, adherence to shared procedures, and willingness to report safety concerns may therefore be important mechanisms through which organizational culture is translated into employee safety behavior.

Taken together, the characteristics indicate a relatively young and occupationally diverse workforce with substantial representation of employees in the early stages of organizational tenure. This context may help explain why organizational factors such as patient safety culture and transformational leadership are important constructs to examine. Newer employees may rely more strongly on organizational norms, supervisory behavior, and established communication practices when learning how safety is prioritized and enacted in daily work. At the same time, the cross-sectional census design does not allow these characteristics to be interpreted as determinants of safety behavior. Rather, they provide contextual information for understanding the workforce in which the observed relationships among safety culture, transformational leadership, and employee safety behavior occurred.

Scale Distributions and Internal Consistency

The descriptive findings indicate a consistently favorable assessment across the three study constructs. Patient safety culture, transformational leadership, and employee safety behavior were all classified as very high based on the four-point response scale. Patient safety culture had an overall mean of 3.83, transformational leadership 3.84, and employee safety behavior 3.86. These findings indicate that employees generally perceived

patient safety as strongly embedded in the organizational environment and reported a high level of safety-oriented behavior in their work.

Table 2. Descriptive Statistics of the Study Variables

Variable/dimension	Mean	Category
Patient safety culture	3.83	Very high
Leadership commitment	3.84	Very high
Open communication	3.80	Very high
Incident reporting	3.88	Very high
Transformational leadership	3.84	Very high
Idealized influence	3.79	Very high
Inspirational motivation	3.85	Very high
Intellectual stimulation	3.87	Very high
Individualized consideration	3.82	Very high
Employee safety behavior	3.86	Very high
Safety compliance	3.86	Very high
Safety participation	3.85	Very high

Scores range from 1 to 4. SD values are based on respondent-level mean scores. α = Cronbach's alpha. Dashes indicate that alpha was not emphasized for the two-item or descriptive subdimensions.

Within patient safety culture, incident reporting received the highest mean (3.88), followed by leadership commitment (3.84) and open communication (3.80). The relatively high assessment of incident reporting indicates that employees perceived reporting as an established component of the organization's approach to patient safety. The comparatively lower score for open communication, although still within the very high category, indicates that communication represents the relatively less strongly perceived dimension of patient safety culture.

Transformational leadership was also assessed very positively. Intellectual stimulation had the highest mean (3.87), followed by inspirational motivation (3.85), individualized consideration (3.82), and idealized influence (3.79). This pattern indicates that employees particularly perceived leadership through the encouragement of ideas, problem solving, and improvement. The comparatively lower score for idealized influence suggests that leadership as a behavioral role model was relatively less prominent than the other dimensions, although it remained within the very high category.

Employee safety behavior also demonstrated a consistently favorable pattern. Safety compliance had a slightly higher mean (3.86) than safety participation (3.85). This indicates that adherence to established safety procedures was marginally stronger than active participation in safety-related improvement activities. Nevertheless, both dimensions were classified as very high, indicating that employees reported not only compliance with safety requirements but also active involvement in activities supporting patient safety and service improvement.

Taken together, the descriptive findings indicate a favorable safety-oriented organizational environment at UPTD Puskesmas Cipadung. Patient safety culture, transformational leadership, and employee safety behavior were all perceived positively. At the dimension level, the differences between the highest and lowest dimensions were relatively small, suggesting a broadly consistent pattern across the constructs rather than a substantial disparity between individual dimensions.

Multiple Linear Regression Predicting Employee Safety Behavior

Multiple linear regression was conducted to examine the simultaneous contribution of patient safety culture and transformational leadership to employee safety behavior. The overall regression model was statistically significant ($F = 64.828$, $p < 0.001$), with an R of 0.885, an R^2 of 0.783, and an adjusted R^2 of 0.771. This indicates that patient safety culture and transformational leadership jointly accounted for a substantial proportion of the observed variation in employee safety behavior in the study setting.

Table 3. Multiple Linear Regression Predicting Employee Safety Behavior

Predictor	B	SE	β	t	p	Tolerance	VIF
Constant	1.598	1.272	—	1.257	0.217	—	—
Patient safety culture	0.509	0.121	0.620	4.215	<0.001	0.613	1.637
Transformational leadership	0.667	0.161	0.516	4.146	0.001	0.813	1.232

Outcome variable: employee safety behavior. B = unstandardized coefficient; SE = standard error; β = standardized coefficient; VIF = variance inflation factor.

Both patient safety culture and transformational leadership were positive and statistically significant predictors of employee safety behavior. Patient safety culture had a positive coefficient ($B = 0.509$; $\beta = 0.620$; $t = 4.215$; $p < 0.001$), while transformational leadership also had a positive coefficient ($B = 0.667$; $\beta = 0.516$; $t = 4.146$; $p = 0.001$). Thus, higher levels of perceived patient safety culture and transformational leadership were associated with more favorable employee safety behavior when both predictors were considered simultaneously.

The standardized coefficients indicate that patient safety culture made the stronger relative contribution to employee safety behavior than transformational leadership. This suggests that the organizational environment surrounding patient safety was more strongly associated with employee safety behavior than transformational leadership within the fitted model. Transformational leadership nevertheless remained a significant predictor, indicating that leadership practices also contributed to differences in reported safety behavior. The regression equation was:

$$Y = 1.598 + 0.509X_1 + 0.667X_2$$

where Y represents employee safety behavior, X_1 represents patient safety culture, and X_2 represents transformational leadership. The positive coefficients indicate that higher

scores on both organizational predictors were associated with higher employee safety behavior.

The multicollinearity diagnostics did not indicate problematic overlap between the two predictors. Tolerance values were 0.613 for patient safety culture and 0.813 for transformational leadership, while VIF values were 1.637 and 1.232, respectively. These values support the simultaneous inclusion of both predictors in the regression model.

Overall, the regression findings indicate that patient safety culture and transformational leadership were both independently and positively associated with employee safety behavior within the study model, with patient safety culture showing the stronger relative contribution. The findings are consistent with the thesis conclusion that the two organizational factors jointly contribute to employee safety behavior.

DISCUSSION

Patient Safety Culture and Employee Safety Behavior

The present study found a consistently favorable perception of patient safety culture among employees at UPTD Puskesmas Cipadung. The overall assessment of patient safety culture was very high, with similarly favorable assessments across leadership commitment, open communication, and incident reporting. This pattern indicates that patient safety was perceived not merely as a formal organizational requirement but as an established component of the working environment. The findings are particularly relevant in primary healthcare, where safety depends on the coordination of clinical services, preventive programs, referrals, communication across professional groups, and continuity of care.

Among the dimensions of patient safety culture, incident reporting received the highest assessment, while open communication received the comparatively lowest assessment, although both remained within the very high category. This pattern may indicate that formal mechanisms for recognizing and reporting safety issues are relatively well established, whereas the interpersonal and communicative processes through which concerns are discussed may require greater attention. A strong reporting system is important for identifying risks, but reporting alone does not ensure organizational learning. The value of reporting depends on whether information is discussed openly, followed by appropriate responses, and incorporated into improvements in work processes.

The favorable assessment of patient safety culture was accompanied by a very high level of employee safety behavior. Safety compliance and safety participation were both strongly rated, with safety compliance marginally higher than safety participation. This pattern is theoretically important because employee safety behavior encompasses both adherences to established safety requirements and voluntary participation in activities that support safety improvement. A safety-oriented organizational environment can establish shared expectations that make safe practices part of routine work rather than an additional responsibility.

The multiple regression results provide further support for the importance of patient safety culture. Patient safety culture demonstrated a positive and statistically

significant contribution to employee safety behavior, with a standardized coefficient of $\beta = 0.620$ ($p < 0.001$). This was the stronger relative contribution among the two predictors in the model. The finding suggests that employees who perceive stronger organizational commitment to patient safety, communication, learning, and reporting are also more likely to report stronger safety behavior.

This finding is consistent with the theoretical perspective that employee behavior is embedded within the organizational context in which work is performed. Safety culture provides employees with shared expectations regarding what constitutes appropriate safety behavior and communicates whether safety is genuinely prioritized by the organization (Palendeng & Bernarto, 2022). When employees perceive that management supports safety, communication is encouraged, and safety problems can be reported and addressed, safety-related behavior becomes more strongly incorporated into everyday work.

The finding also supports previous evidence emphasizing the importance of organizational factors in patient safety within primary healthcare. Studies of Puskesmas have identified communication, reporting systems, organizational support, staffing, and employee-related factors as important components of patient safety practice (Astriyani et al., 2021; Lumbantobing & Thamrin, 2025; Paputungan et al., 2022; Sabirin et al., 2022). The present study extends this perspective by demonstrating that the broader perception of patient safety culture is significantly associated with employee safety behavior in a primary healthcare setting.

Nevertheless, the high descriptive scores should be interpreted carefully. All three principal constructs were rated close to the upper end of the four-point scale. This restricted distribution suggests that employees generally perceived their safety environment and behavior positively, but it also limits the extent to which differences between respondents can be observed. The findings may therefore reflect a genuinely favorable organizational environment, while also potentially being influenced by self-report, social desirability, and the absence of a neutral response category. Furthermore, because the study involved all 39 employees of a single Puskesmas, the findings should not be interpreted as representative of primary healthcare facilities throughout Indonesia.

Transformational Leadership and Employee Safety Behavior

Transformational leadership was also perceived very favorably by employees. Among its dimensions, intellectual stimulation received the highest assessment, followed by inspirational motivation, individualized consideration, and idealized influence. This pattern suggests that employees particularly recognized leadership through encouragement of problem solving, motivation, and support for improvement. The high assessment of intellectual stimulation is particularly relevant to patient safety. Safety improvement often requires employees to identify problems, question established practices when necessary, consider alternative solutions, and learn from incidents. Leadership that encourages employees to think critically and participate in improvement activities can therefore create conditions that support safety-oriented behavior. The

regression analysis demonstrated that transformational leadership had a positive and statistically significant contribution to employee safety behavior ($\beta = 0.516$, $p = 0.001$). Although its relative contribution was lower than that of patient safety culture, the result indicates that leadership remains an important organizational factor associated with how employees enact safety in their work.

This finding is consistent with transformational leadership theory, which emphasizes idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Muis & Isyanto, 2022; Patarru' et al., 2020; Sutanto et al., 2021; Yulianti & Susanti, 2025). Transformational leaders influence employees not only through formal authority but also by communicating a shared vision, demonstrating desired values, encouraging problem solving, motivating employees, and recognizing individual contributions. In a healthcare organization, these behaviors can help make patient safety a visible and meaningful organizational priority (Althobaiti, 2026; Hamdan et al., 2024; Syabanasyah et al., 2023; Wijayanti & Aini, 2022).

The relevance of transformational leadership may be particularly pronounced in a Puskesmas because primary healthcare requires coordination among multiple professional groups and service functions. Clinical personnel, public-health workers, pharmacy and laboratory staff, medical-record personnel, and support staff contribute to interconnected processes. Leadership that promotes communication, shared responsibility, problem solving, and employee involvement can therefore help align these different roles around common safety objectives.

The significant contribution of transformational leadership in the present study also suggests that safety behavior cannot be understood exclusively as the product of organizational systems. The way leaders communicate expectations, respond to problems, encourage improvement, and involve employees may directly influence employees' willingness to maintain and strengthen safe practices.

Relative Contribution of Patient Safety Culture and Transformational Leadership

An important finding of this study is that both patient safety culture and transformational leadership remained significant when entered simultaneously into the multiple regression model. Patient safety culture demonstrated the stronger standardized contribution ($\beta = 0.620$), while transformational leadership also showed a significant positive contribution ($\beta = 0.516$). Thus, the findings do not support treating leadership and safety culture as competing explanations of employee safety behavior. Rather, both appear to be relevant organizational factors.

The stronger contribution of patient safety culture may be explained by its greater proximity to the behavioral outcome. Patient safety culture encompasses organizational conditions that employees encounter directly in their daily work, including leadership commitment, communication, incident reporting, and organizational responses to safety issues. These mechanisms provide the immediate organizational context within which safety behavior is performed. Transformational leadership, in contrast, may influence employee behavior partly by shaping this organizational context. Leadership can establish

priorities, reinforce safety expectations, encourage communication, stimulate learning, and support employee participation. Through these processes, leadership becomes visible not only as an individual leadership characteristic but also through the organizational systems and practices experienced by employees.

This interpretation is consistent with the conceptual relationship between leadership and safety culture. Although the two constructs are theoretically distinguishable, they are practically connected. Leadership commitment can become embedded in safety policies, communication practices, learning processes, reporting systems, and employee participation. Consequently, effective leadership may strengthen safety behavior both through direct interactions with employees and through the safety culture that leaders help establish (Dhamanti et al., 2022; Ip et al., 2025; Waruwu et al., 2026).

The present findings therefore support an integrated understanding of organizational safety. A strong safety culture provides the organizational foundation for safe behavior, while transformational leadership can reinforce that foundation by motivating employees, stimulating improvement, and demonstrating commitment to safety. Neither construct needs to be considered in isolation.

Overall Contribution of the Regression Model

The overall regression model was statistically significant and produced an R^2 of 0.783, indicating that patient safety culture and transformational leadership jointly accounted for a substantial proportion of the observed variation in employee safety behavior. This finding highlights the importance of organizational factors in understanding safety behavior among employees in primary healthcare.

However, the magnitude of the R^2 should not be interpreted as evidence that these organizational factors causally determine employee safety behavior. The study used a cross-sectional design and self-reported measures collected from employees within a single facility. The observed relationships may therefore reflect associations among perceptions measured at the same point in time. Other factors not included in the model may also contribute to employee safety behavior, including workload, staffing conditions, professional experience, organizational resources, individual motivation, training, and the characteristics of specific work processes.

The regression diagnostics provide additional support for interpreting the two predictors together. The tolerance values and VIF values were within acceptable ranges, indicating that the predictors did not exhibit problematic multicollinearity in the final model. Therefore, the significant contributions of patient safety culture and transformational leadership can be interpreted as statistically distinguishable within this dataset.

At the same time, the relatively strong contribution of both variables should be interpreted in the context of the study population and measurement approach. Because all variables were measured through employee self-report, common-method effects cannot be excluded. Future research using larger multisite samples and objective safety indicators

could provide stronger evidence regarding the extent to which these organizational factors are associated with actual safety practices.

Implications for Primary Healthcare

The findings have several implications for patient safety management in primary healthcare. First, strengthening patient safety culture should remain a central organizational priority. The results indicate that safety behavior is closely connected with how employees perceive the organizational environment surrounding safety. Efforts to improve safety should therefore extend beyond individual compliance training and address communication, reporting, teamwork, organizational learning, and management commitment.

Second, transformational leadership should be developed alongside safety-culture initiatives. The significant contribution of transformational leadership suggests that leaders have an important role in translating organizational safety priorities into everyday practice. Leaders can reinforce this role by communicating clear safety expectations, encouraging employees to raise concerns, stimulating problem solving, supporting learning from incidents, and recognizing employee contributions to safety improvement.

Third, the relatively lower assessment of open communication and idealized influence compared with other dimensions provides a useful organizational point of attention. Although these dimensions remained highly rated, strengthening them may further support the transition from a safety environment characterized primarily by compliance toward one in which employees are increasingly encouraged to speak up, question unsafe practices, and participate actively in improvement.

Finally, the slightly lower assessment of safety participation compared with safety compliance suggests that maintaining safe procedures should be complemented by opportunities for employees to become active contributors to safety improvement. Employees should not only be expected to follow established procedures but also be encouraged to identify risks, communicate concerns, report incidents, suggest improvements, and participate in quality and safety activities.

Strengths and Limitations

A strength of this study is its use of total population sampling, whereby all eligible employees at the participating Puskesmas were included. This approach provides a comprehensive representation of the workforce within the study setting and avoids sampling selection within the facility.

Several limitations should nevertheless be considered. The study was conducted in a single primary healthcare facility with a relatively small number of respondents, limiting generalizability to other Puskesmas and healthcare settings. The cross-sectional design also prevents conclusions regarding temporal direction or causality. In addition, all principal variables were assessed using self-reported questionnaires, which may be affected by social desirability and common-method bias. Finally, the concentration of responses toward the upper end of the four-point scale may have limited variability among respondents.

Future studies should therefore examine these relationships using larger samples across multiple Puskesmas and other primary healthcare facilities. Longitudinal designs could help clarify whether changes in leadership and safety culture precede changes in employee safety behavior. Incorporating objective indicators, such as incident reports, safety audits, compliance observations, and quality-improvement outcomes, would also strengthen the evidence beyond employee perceptions alone.

CONCLUSION

This study demonstrates that patient safety culture and transformational leadership are both important organizational factors associated with employee safety behavior in primary healthcare. Employees who perceived stronger patient safety culture tended to report stronger safety-related behavior, indicating that safe work practices are shaped not only by individual responsibility but also by the organizational environment in which employees work. A culture that emphasizes safety, communication, teamwork, incident reporting, learning, and constructive responses to safety concerns can provide the conditions in which safe behavior becomes part of routine practice. Transformational leadership was also positively associated with employee safety behavior. This finding indicates that leadership remains relevant to how employees perceive and enact safety in their daily work. Leaders who communicate a clear safety vision, encourage problem solving, demonstrate commitment to safety, and involve employees in improvement activities can reinforce safety as a shared organizational responsibility. When considered simultaneously, patient safety culture demonstrated the stronger relative contribution to employee safety behavior, while transformational leadership also made a significant contribution. This finding suggests that leadership and safety culture should not be treated as isolated organizational factors. Leadership may influence safety behavior by strengthening the organizational conditions through which safety priorities are communicated, practiced, and sustained. At the same time, a supportive safety culture provides an environment in which transformational leadership can be translated into consistent employee behavior.

The findings also emphasize that employee safety behavior extends beyond procedural compliance. Sustainable safety requires employees to participate actively in identifying risks, communicating concerns, reporting incidents, and contributing to improvement. Such participation is more likely when employees perceive that their contributions are valued and that safety concerns are addressed constructively. For primary healthcare organizations, the findings support an integrated approach in which leadership development and patient safety culture improvement are pursued together. Strengthening leadership should be accompanied by organizational practices that promote open communication, teamwork, learning from incidents, supportive responses to errors, and meaningful employee participation. This approach can help translate leadership commitment into everyday safety practices.

The findings should be interpreted within the context of a single community health center and a cross-sectional design. The observed relationships do not establish causal

direction and may not be generalizable to other primary healthcare settings. Future research involving multiple Puskesmas, longitudinal designs, and objective safety indicators is needed to determine how leadership and patient safety culture interact over time and whether strengthening these organizational factors leads to sustained improvements in employee safety behavior.

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