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Empathy, Emotion Regulation, and Work Engagement as Predictors of Compassionate Care Behavior A JD-R Perspective

Dery Kurniawan^{1,*} , Suminar²



¹Psychology Study Program, Faculty of Health Sciences, Bina Bangsa University, Serang City, 42124, Indonesia

²Psychology Study Program, Faculty of Health Sciences, Bina Bangsa University, Serang City, 42124, Indonesia

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Correspondence:

Kurniawan

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ABSTRACT

Purpose - This study investigates how cognitive empathy, affective empathy, behavioral empathy, and emotional regulation influence compassionate care behaviors among nurses and midwives in Indonesian Type B and Type C public hospitals. It also examines work engagement as a mediator. Based on the Job Demands–Resources (JD-R) theory, the research views personal psychological resources as crucial factors that motivate and improve patient-centered care outcomes.

Design/methodology/approach - A quantitative, cross-sectional survey used a self-administered structured questionnaire. Data were collected from nurses and midwives and analyzed with Structural Equation Modeling (SmartPLS 4.0). The model examined both direct and indirect relationships among six latent constructs: four personal resources, work engagement, and compassionate care behaviour.

Findings - Results show that cognitive empathy, affective empathy, behavioral empathy, and emotional regulation all significantly affect compassionate care behaviors, both directly and through work engagement. Emotional regulation was identified as the most powerful predictor of work engagement, emphasizing its vital role in maintaining psychological energy and involvement in demanding clinical settings. Work engagement consistently mediates all proposed relationships, demonstrating its importance as a key motivational factor within the JD-R framework.

Originality/value - This study integrates empathy dimensions and emotional regulation within a single JD-R framework, demonstrating how healthcare workers transform personal resources into compassionate care. The findings provide advances in healthcare psychology theory and offer practical strategies to improve nurse and midwife engagement and patient care quality, particularly in resource-limited hospital settings.

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1. Introduction

Empathy is widely recognized as a core professional capability that determines how nurses and midwives connect with, understand, and respond to patients in clinical settings. At its essence, empathy comprises shared cognitive, affective, and behavioral dimensions that shape healthcare professionals' ability to perceive and address patient suffering, serving as a relational foundation that binds caring identity with professional practice (Cruz et al., 2026). Within healthcare psychology, empathy influences not only routine patient interactions but also professionals' capacity to sustain compassionate responses amid emotional demands and systemic pressures (Clark et al., 2019). In hospital settings, empathy underpins communication quality, patient trust, clinical responsiveness, and professional resilience, all of which are essential for healthcare systems confronting workforce shortages, rising patient acuity, and shifting care expectations (Aiken et al., 2014; Ball et al., 2018; Sinclair et al., 2017). Given that empathy functions as both a cognitive frame and a behavioral mechanism guiding clinical action, its relevance extends from everyday bedside manner to sustained compassionate care in demanding environments.

Contemporary research has increasingly examined empathy within healthcare, highlighting its role in shaping psychological constructs such as emotional regulation, work engagement, and compassionate behavior (Decety and Jackson, 2004; Gross, 2015; Schaufeli et al., 2006). For example, cognitive and affective empathy have been linked with higher levels of clinical understanding, emotional resonance, and patient-centered communication (Davis, 1983; Reniers et al., 2011). Similarly, multidimensional empathy among Portuguese psychologists was shown to be interrelated with professional self-perception and therapeutic effectiveness (Cruz et al., 2026). Beyond internal empathic processes, behavioral expressions of empathy shape how patients experience psychological safety—the perception that their concerns are heard, validated, and addressed without fear of being dismissed—which is critical for therapeutic trust and engagement in care (Malenfant et al., 2022; Sinclair et al., 2016). Empirical evidence from recent healthcare studies further demonstrates that emotion regulation moderates the relationship between empathic capacity and professional well-being, underscoring its psychological role beyond surface-level coping (Gratz and Roemer, 2004; Hu et al., 2014). Moreover, studies of work engagement in European nursing contexts have identified emotion regulation as a contextual driver of sustained motivation and quality of care (Bakker and Demerouti, 2017; Christian et al., 2011). Collectively, these recent developments show that empathy is not static but interacts dynamically with individual psychological states and care outcomes in hospital settings.

Despite burgeoning research interest, several gaps remain in how empathy, emotional regulation, and work engagement are conceptualized and operationalized within the psychology of healthcare. First, existing studies often focus on empathy as an isolated correlate of care quality rather than as part of an integrated motivational mechanism that connects personal resources (such as emotional regulation) with internal psychological processes and behavioral outcomes (Grandey, 2000; Hülshager and Schewe, 2011). There is limited comparative evidence showing how three-dimensional empathy—cognitive, affective, and behavioral—interacts with emotional regulation to influence compassionate care through work engagement in resource-limited hospital settings. Second, while the literature acknowledges that empathy influences care behavior, there is a paucity of research integrating multidimensional empathy with motivational mechanisms such as work engagement in nursing and midwifery contexts—mechanisms that are central to Job Demands–Resources (JD-R) Theory (Bakker and Demerouti, 2017; Demerouti et al., 2001). Third, relatively few studies explicitly examine the interplay between empathy and emotional regulation among non-psychologist healthcare professionals, despite widespread recognition that emotional demands in nursing and midwifery practice are reshaping professional well-being and care delivery worldwide (Dall’Ora et al., 2020; Sinclair et al., 2016). These gaps point to the need for integrative frameworks that link empathy, emotional regulation, work engagement, and compassionate care to broader motivational processes—a focus that remains underdeveloped in the current healthcare literature.

To address these gaps, the present study adopts a quantitative cross-sectional perspective grounded in JD-R Theory. This approach frames empathy and emotional regulation as personal resources—psychological systems of shared meaning and adaptive capacity—rather than merely isolated traits or clinical skills (Bakker and Demerouti, 2017). By examining relationships among four personal resources (cognitive empathy, affective empathy, behavioral empathy, and emotional regulation), work engagement, and compassionate care behavior, the study elucidates how these resources serve as motivational drivers that link internal psychological capacities to observable care outcomes. The current research draws on JD-R Theory (Bakker and Demerouti, 2017; Demerouti et al., 2001) to interpret how personal resources activate work engagement—a lens particularly useful for understanding healthcare professionals’ varied responses to emotional demands and workload pressures. In addition, the multidimensional empathy framework (Cruz et al., 2026; Davis, 1983; Decety and Jackson, 2004) is employed to explain how distinct empathic dimensions foster or sustain compassionate actions essential for patient-centered care. This integrative theoretical stance advances research in healthcare psychology by foregrounding motivational mechanisms as central to the translation of empathy into compassionate behavior.

The primary purpose of this article is to provide a comprehensive examination of how cognitive empathy, affective empathy, behavioral empathy, and emotional regulation influence compassionate care behavior through work engagement, with particular attention to the Indonesian nursing and midwifery context. By investigating these relationships among nurses and midwives in Type B and Type C Regional General Hospitals in East Java, the research illuminates how personal resources drive compassionate care, identifies direct and indirect pathways of influence, and highlights motivational dynamics that underpin sustained quality of care in demanding clinical settings. The findings aim to inform both theory and practice by: (1) clarifying how work engagement mediates relationships between personal resources and compassionate care behavior; (2) explicating linkages among empathy dimensions, emotional regulation, and care outcomes; and (3) offering insights into how hospital leaders can cultivate work engagement to support compassionate care and professional well-being. In doing so, this study contributes to a more nuanced, psychologically grounded understanding of empathy and compassionate care within the evolving landscape of Indonesian healthcare.

2. Literature Review

2.1 Theoretical Foundation

Job Demands–Resources (JD-R) Theory serves as the grand theory of this study because it explains how personal resources operate within highly demanding work contexts. The theory posits that job characteristics can be classified into job demands and job resources, and that personal resources help individuals sustain engagement and performance despite intense work pressures (Bakker and Demerouti, 2017; Demerouti et al., 2001). In the context of nurses and midwives, cognitive empathy, affective empathy, behavioral empathy, and emotional regulation are positioned as personal resources that foster work engagement, a motivational state that leads to compassionate care behavior.

Within the JD-R framework, the three dimensions of empathy represent the capacity to understand, emotionally resonate with, and behaviourally express empathic responses in professional care settings, whereas emotional regulation supports emotional control in stressful clinical encounters (Clark et al., 2019; Cruz et al., 2026; Gross, 2015). Work engagement, characterized by vigor, dedication, and absorption, serves as a motivational mechanism that links personal resources to behavioral outcomes (Schaufeli et al., 2006). Compassionate care behavior is positioned as the outcome because it reflects sensitive, responsive, and action-oriented care aimed at alleviating patient suffering (Sinclair et al., 2016). This model addresses a gap in the literature by applying JD-R Theory to multidimensional empathy as personal resources among non-psychologist healthcare professionals in Indonesia.

2.2 Empathy and Emotional Regulation

Cognitive empathy refers to the capacity to understand patients’ perspectives, emotions, and care needs through perspective-taking, clinical interpretation, and accurate appraisal of interpersonal cues. In nursing and midwifery practice, this capability enables professionals to recognize not only explicit complaints but also implicit concerns expressed through language, behavior, and non-verbal signals (Cruz et al., 2026; Davis, 1983). Nurses and midwives who can interpret patients’ experiences more accurately are better positioned to tailor communication, anticipate emotional needs, and respond in ways that reflect patient-centered understanding (Clark et al., 2019). Because compassionate care requires recognizing suffering before taking action to relieve it, cognitive understanding constitutes a necessary foundation for compassionate behavior (Sinclair et al., 2016). Accordingly, this study hypothesizes:

H1. Cognitive empathy positively affects compassionate care behavior.

Affective empathy denotes the capacity to resonate emotionally with patients’ distress while maintaining appropriate professional boundaries. It reflects emotional sensitivity, empathic concern, and the ability to perceive patients’ suffering as meaningful without becoming overwhelmed by it (Cruz et al., 2026; Decety and Jackson, 2004). In healthcare contexts, affective empathy is important because nurses and midwives frequently encounter pain, fear, anxiety, and vulnerability in patients and families. Such emotional resonance can foster a sense of shared humanity and motivate warm, caring, and supportive responses (Davis, 1983). Compassionate care involves not only recognizing suffering but also being moved emotionally to respond to it with sensitive, humane action (Malenfant et al., 2022; Sinclair et al., 2016). Accordingly, this study hypothesizes:

H2. Affective empathy positively influences compassionate care behavior.

Behavioral empathy involves observable acts of understanding, such as active listening, verbal affirmation, warm nonverbal cues, reassurance, and adjusting communication based on patients' emotional cues. Unlike cognitive and affective empathy, which are internal processes, behavioral empathy demonstrates empathic ability through concrete behaviors directed at patients (Clark et al., 2019; Cruz et al., 2026). This aspect is especially important in nursing and midwifery care, where patients often judge quality by what professionals say, how they listen, and whether they respond with respect and emotional engagement. Because compassion in healthcare requires action to alleviate suffering, behavioral empathy serves as the closest precursor to compassionate care (Malenfant et al., 2022; Sinclair et al., 2016). Accordingly, this study hypothesizes:

H3. Behavioral empathy positively affects compassionate care behavior.

Emotional regulation is the ability to monitor, evaluate, and modify emotional reactions to maintain goal-directed behavior in demanding situations. It includes strategies such as cognitive reappraisal and expressive control, which help professionals manage emotional responses without compromising professional conduct (Gross and John, 2003; Grossi and Thomasson, 2015). Nurses and midwives routinely face emotional stressors, including patient suffering, family distress, workload pressures, and urgent clinical demands; these conditions require effective regulation to sustain calm, respectful, and compassionate responses (Grandey, 2000; Hülshager and Schewe, 2011). Poor regulation may increase emotional strain, whereas effective regulation supports adaptive functioning, impulse control, and consistent professional care (Gratz and Roemer, 2004; Hu et al., 2014). Accordingly, this study hypothesizes:

H4. Emotional regulation positively affects compassionate care behavior.

2.3 Empathy, Emotional Regulation, and Work Engagement

Cognitive empathy can be conceptualized as a personal resource within JD-R Theory because it enables healthcare professionals to interpret patients' perspectives, needs, and emotional states more accurately (Bakker and Demerouti, 2017). It reflects perspective-taking and clinical understanding, allowing nurses and midwives to make sense of patients' verbal and non-verbal cues during care encounters (Cruz et al., 2026; Davis, 1983). When professionals can accurately understand patient conditions, they may experience greater role clarity, reduced interpersonal uncertainty, and a stronger sense of professional competence. These experiences are closely aligned with work engagement, which involves vigor, dedication, and absorption (Christian et al., 2011; Schaufeli et al., 2006). Accordingly, this study hypothesizes:

H5. Cognitive empathy positively affects work engagement.

Affective empathy represents the capacity to resonate emotionally with patients' distress while maintaining appropriate professional boundaries (Cruz et al., 2026; Decety and Jackson, 2004). Within JD-R Theory, this capacity can be positioned as a personal resource because it strengthens the relational meaning of care work and helps professionals connect emotionally with the human significance of their roles (Bakker and Demerouti, 2017). For nurses and midwives, emotional resonance with patients may reinforce intrinsic motivation, professional dedication, and a sense that their work matters. Since work engagement is characterized by energetic involvement and meaningful identification with work, affective empathy may increase engagement by deepening the emotional value attached to patient care (Christian et al., 2011; Schaufeli et al., 2006). Accordingly, this study hypothesizes the following:

H6. Affective empathy positively affects work engagement.

Behavioral empathy involves observable acts such as active listening, verbal validation, nonverbal warmth, and adaptive communication (Clark et al., 2019; Cruz et al., 2026). Within the JD-R framework, it serves as a personal resource, helping nurses and midwives translate internal empathic abilities into effective interpersonal behaviors and enhance patient interactions (Bakker and Demerouti, 2017). Expressing empathy through behavior can elicit positive patient responses such as trust, cooperation, and gratitude, which can serve as rewarding interpersonal resources that boost professional motivation. These positive interactions may increase feelings of energy, fulfillment, and persistence at work, all of which are vital to work engagement (Bakker et al., 2007; Demerouti et al., 2001). Accordingly, this study hypothesizes the following:

H7. Behavioral empathy positively affects work engagement.

Emotional regulation is the ability to monitor, evaluate, and modify emotional reactions to maintain goal-directed behavior in demanding situations (Gross, 2015; Gross and John, 2003). JD-R Theory positions such self-regulatory capacity as a personal resource because it helps individuals manage job demands without excessive psychological depletion (Bakker and Demerouti, 2017). Nurses and midwives frequently encounter emotional labor, patient suffering, family distress, and workload pressure; effective regulation allows them to remain composed and professionally involved despite these demands (Grandey, 2000; Hülshager and Schewe, 2011). By supporting impulse control, emotional stability, and adaptive coping, emotional regulation may preserve psychological energy and enable sustained vigor, dedication, and absorption in clinical work (Gratz and Roemer, 2004; Hu et al., 2014). Accordingly, this study hypothesizes the following:

H8. Emotional regulation positively affects work engagement.

2.4 Work Engagement and Compassionate Care

Work engagement is a positive and fulfilling mental state associated with work, characterized by three key elements: vigor, dedication, and absorption (Schaufeli et al., 2006). Vigor reflects high energy and resilience during work tasks; dedication involves a strong sense of purpose, enthusiasm, and involvement in one's role, and absorption refers to complete concentration and deep immersion in tasks. According to the Job Demands–Resources (JD-R) Theory, work engagement is a crucial motivational process that develops when employees have adequate personal and job resources, leading to constructive behaviors (Bakker and Demerouti, 2017; Demerouti et al., 2001). In the fields of nursing and midwifery, where professionals regularly face emotional and physical challenges, work engagement is an essential psychological state that encourages ongoing involvement, proactive responses, and high-quality interpersonal care (Bakker and Albrecht, 2018; Christian et al., 2011).

Work engagement is likely to directly boost compassionate care behavior by increasing the energy, motivation, and focus needed for patient-centered care. Specifically, vigor provides the physical and mental strength required for attentive listening and emotional engagement during patient interactions, which are vital for compassionate care (Schaufeli et al., 2006; Sinclair et al., 2016). Dedication fosters a sense of purpose and professional commitment, leading to respectful, dignity-preserving, and patient-centered communication (Christian et al., 2011; Malenfant et al., 2022). Additionally, absorption allows nurses and midwives to be fully present and immersed in caregiving tasks, promoting warmth, responsiveness, and prompt practical support. Research shows that higher work engagement consistently correlates with better interpersonal skills and more effective healthcare delivery (Bakker and Albrecht, 2018; Dall'Ora et al., 2020). Accordingly, this study hypothesizes the following:

H9. Work engagement positively influences compassionate care behavior.

2.5 Work Engagement as a Mechanism

Within the Job Demands–Resources (JD-R) theory, work engagement is viewed as a key motivational process in which personal and job resources lead to positive behavioral outcomes (Bakker and Demerouti, 2017; Demerouti et al., 2001). Cognitive empathy, affective empathy, behavioral empathy, and emotional regulation—recognized as important personal resources in healthcare—are expected to boost work engagement by enhancing energy, psychological involvement, and task immersion. The JD-R Theory also suggests that engaged employees tend to maintain motivation and are more capable of translating internal resources into consistent performance (Bakker et al., 2007; Demerouti et al., 2001). Therefore, work engagement serves as a central mechanism by which personal resources influence compassionate care behaviors among nurses and midwives. Accordingly, this study hypothesizes the following:

H10. Empathy and emotional regulation indirectly improve compassionate care through increased work engagement.

Cognitive empathy enhances work engagement by enabling healthcare professionals to accurately interpret patients’ perspectives, needs, and emotional cues, thereby increasing cognitive clarity and professional confidence (Cruz et al., 2026; Davis, 1983). Within JD-R theory, such clarity operates as a motivational resource that strengthens dedication and absorption in work tasks by reducing uncertainty and increasing perceived competence (Bakker and Demerouti, 2017). As engagement increases, nurses and midwives are more likely to translate understanding into sustained, patient-centered, and compassionate care behaviors (Christian et al., 2011; Schaufeli et al., 2006). Thus, cognitive empathy indirectly contributes to compassionate care behavior by enhancing work engagement. Accordingly, this study hypothesizes the following:

H11. Cognitive empathy has a positive indirect effect on compassionate care behavior via work engagement.

Affective empathy fosters emotional resonance with patients’ suffering, thereby deepening interpersonal meaning and enhancing intrinsic motivation in caregiving roles (Cruz et al., 2026; Decety and Jackson, 2004). From a JD-R perspective, such emotional connectedness operates as a personal resource that strengthens work engagement by increasing dedication and absorption in meaningful patient interactions (Bakker and Demerouti, 2017). This heightened engagement, in turn, facilitates sustained compassionate care behavior by maintaining emotional energy and reinforcing patient-centered commitment in clinical practice (Christian et al., 2011; Schaufeli et al., 2006). Consequently, affective empathy is expected to influence compassionate care behavior indirectly through work engagement. Accordingly, this study hypothesizes the following:

H12. Affective empathy has a positive indirect effect on compassionate care behavior via work engagement.

Behavioral empathy represents the outward expression of empathic understanding through active listening, verbal validation, and adaptive communication with patients (Clark et al., 2019; Cruz et al., 2026). Within JD-R theory, these behavioral expressions generate positive interpersonal feedback such as trust, gratitude, and cooperation, which function as reinforcing motivational resources that enhance work engagement (Bakker et al., 2007; Demerouti et al., 2001). Increased engagement subsequently strengthens nurses’ and midwives’ capacity to maintain consistent, high-quality compassionate care behavior by sustaining energy and psychological involvement in patient care processes (Bakker and Demerouti, 2017; Schaufeli et al., 2006). Thus, behavioral empathy contributes indirectly to compassionate care behavior through work engagement. Accordingly, this study hypothesizes the following:

H13. Behavioral empathy has a positive indirect effect on compassionate care behavior via work engagement.

Emotional regulation supports work engagement by enabling nurses and midwives to manage emotional demands effectively, thereby preventing excessive psychological depletion and sustaining motivational energy (Gross, 2015; Gross and John, 2003). In JD-R theory, emotional regulation is a critical personal resource that protects employees from emotional exhaustion and supports continued engagement in demanding work environments (Bakker and Demerouti, 2017). By reducing emotional strain and emotional labor costs, effective regulation helps maintain vigor, dedication, and absorption, which are essential for sustained performance (Hu et al., 2014; Hülsheger and Schewe, 2011). This sustained engagement, in turn, ensures that emotional regulation capacity translates into consistent, compassionate care behavior in clinical practice. Accordingly, this study hypothesizes the following:

H14. Emotional regulation has a positive indirect effect on compassionate care behavior via work engagement.

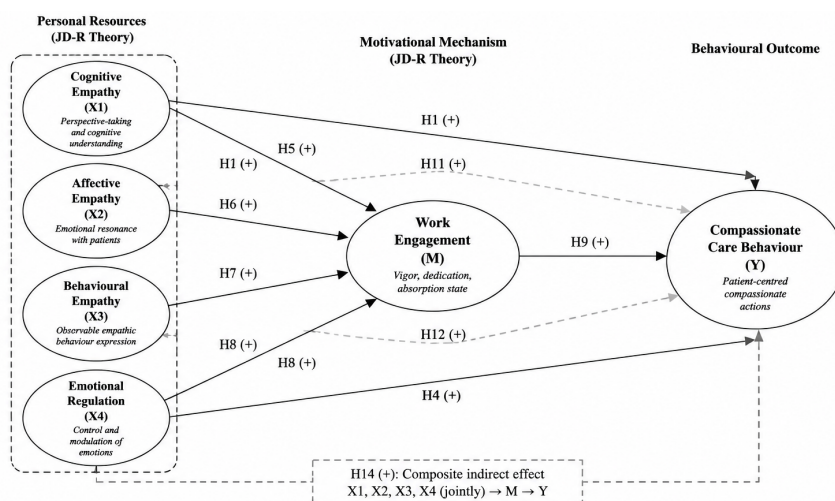


Figure 1. Empathy, Emotion Regulation, and Work Engagement Model

2.6 Conceptual Research Model

Rooted in Job Demands-Resources (JD-R) Theory, this study presents an integrated model in which cognitive, affective, and behavioral empathy, along with emotion regulation, are considered personal resources. Work engagement functions as a motivational driver, with compassionate care behavior as the key behavioral outcome (Bakker and Demerouti, 2017; Demerouti et al., 2001). The model indicates that these four personal resources directly influence compassionate care (H1–H4) and also enhance work engagement (H5–H8), which subsequently

Table 1. Target Population Criteria

Criterion	Description
Target Population	All nurses and midwives working in Type B and Type C Regional General Hospitals (RSUD) in East Java Province, Indonesia
Unit of Analysis	Individual healthcare professional (nurse or midwife)
Age Range	22–55 years
Minimum Work Experience	> 1 year of professional clinical practice
Employment Status	Permanent (civil servant) and non-permanent/contract staff
Estimated Population Size	Approximately 12,500 healthcare workers; this figure is used as a working assumption based on study design requirements and has not yet been formally verified by the relevant health authorities in the Java region

directly affects compassionate care (H9). Moreover, work engagement acts as a mediator, through which all four personal resources indirectly impact compassionate care (H10–H14), supporting JD-R theory's premise that motivational states convert resources into performance outcomes (Christian et al., 2011; Schaufeli et al., 2006). As depicted in Figure 1, the structural model shows both direct and indirect routes, emphasizing the dual role of personal resources in shaping compassionate care. This model extends JD-R theory by integrating multidimensional empathy and emotion regulation into a comprehensive framework for motivation and behavior in healthcare, addressing a significant gap in the nursing and midwifery literature (Sinclair et al., 2016).

3. Methodology

3.1 Research Design

This study uses a quantitative, deductive approach to test a set of a priori hypotheses based on Job Demands–Resources (JD-R) Theory (Demerouti et al., 2001; Bakker and Demerouti, 2017), focusing on how empathy dimensions, emotional regulation, work engagement, and compassionate care behavior interrelate. A cross-sectional survey design was chosen because it effectively examines structural relationships among latent variables at a single time point and is common in healthcare and nursing research, where tracking over time is limited. Data collection involved a self-administered structured questionnaire using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), following best practices for behavioral scale development (Boateng et al., 2018). The data were analyzed using Structural Equation Modeling (SEM), specifically Partial Least Squares SEM (PLS-SEM), which is well-suited to complex multivariate models with multiple latent variables, mediation paths, and predictive relationships (Hair et al., 2019). The framework, grounded in JD-R Theory, includes six latent variables and fourteen hypothesized relationships—nine direct and five indirect—allowing simultaneous measurement and structural assessment while addressing potential common method bias (Podsakoff et al., 2003). This design supports a thorough examination of the hypotheses and leads into the next section on population and sample.

3.2 Population, Sample, and Sampling Technique

This study targets all nurses and midwives working in Type B and Type C Regional General Hospitals (RSUD) across East Java Province, Indonesia. These hospitals were selected because they are central to public healthcare in Indonesia, characterized by high patient volumes, staffing shortages, and emotional labor demands, making them ideal for examining empathy, emotional regulation, and compassionate care. The unit of analysis comprises individual healthcare professionals—nurses and midwives. As shown in Table 1, the population includes professionals aged 22–55 years with at least one year of clinical experience, including both permanent (civil servant/PNS) and contract workers. The estimated total population is approximately 12,500 healthcare workers, pending confirmation from the relevant health authorities in the Java region.

A proportionate stratified random sampling method was used to ensure key subgroups were represented. The population was divided by hospital type (Type B vs. Type C) and role (nurses vs. midwives), which helped create a balanced sample across both institutional and occupational groups. This strategy improves external validity by minimizing sampling bias and capturing differences in clinical environments and professional duties. Hospitals were randomly selected from a list provided by the East Java Provincial Health Office, and staff eligible for inclusion were randomly picked from each hospital's roster according to predefined criteria. This approach ensures that every subgroup has a known, nonzero chance of being selected, thereby increasing the overall applicability of the results (Boateng et al., 2018).

The minimum sample size was determined using the Slovin formula ($n = N / (1 + N \cdot e^2)$), yielding 266 respondents from a population of 12,500 with a 6.07% margin of error. However, considering the complexity of the structural equation model, a more conservative approach was also adopted—following the SEM guideline of at least 10 observations per indicator (Hair et al., 2019). This indicates a minimum of 300 respondents for the 30 indicators involved in this study. Consequently, the goal was to gather 300–350 valid responses to ensure sufficient statistical power and model stability. Participants comprised nurses and midwives with at least 1 year of clinical experience working in inpatient or outpatient settings and who were willing to participate. Exclusion criteria included healthcare workers on extended leave exceeding three months and those in administrative roles without patient contact. The next subsection covers the measurement instrument design, detailed in Subsection 3.3.

3.3 Research Instrument

Data were gathered through a self-administered structured questionnaire divided into six sections matching the study's constructs: (1) Cognitive Empathy, (2) Affective Empathy, (3) Behavioral Empathy, (4) Emotional Regulation, (5) Work Engagement, and (6) Compassionate Care Behavior. The questionnaire included 30 items, with five items assigned to each latent variable. Respondents rated each item on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). All constructs were modeled as reflective latent variables in accordance with standard psychometric practices (Boateng et al., 2018; Schaufeli et al., 2006). Table 2 details the full measurement instrument, including variable names, item codes, statements, and original sources.

The measurement items were derived from validated instruments in existing literature. Items assessing cognitive, affective, and behavioral empathy primarily stemmed from the Portuguese psychologist's Empathy Scale by Cruz et al. (2026), complemented by classical empathy measures such as Davis (1983), Decety and Jackson (2004), and Reniers et al. (2011), with adaptations to fit nursing and midwifery contexts.

Table 2. Measurement Instrument for Empathy, Emotional Regulation, Work Engagement, and Compassionate Care Behavior

Variable	Code	Indicator	Item Statement	Scale	Source
Cognitive Empathy (CE)	CE1	Perspective Taking	I try to understand the patient’s perspective before providing nursing/midwifery care.	Likert 1–5	Cruz et al. (2026); Davis (1983)
	CE2	Understanding Patient Feelings	I attempt to understand patients’ feelings when they express complaints or concerns.	Likert 1–5	Cruz et al. (2026); Reniers et al. (2011)
	CE3	Non-Verbal Cue Interpretation	I pay attention to patients’ facial expressions, tone of voice, and body language to understand their condition.	Likert 1–5	Cruz et al. (2026)
	CE4	Patient Motive Understanding	I try to understand why patients think or behave in certain ways.	Likert 1–5	Cruz et al. (2026); Davis (1983)
	CE5	Clinical Perspective Accuracy	I can anticipate patients’ emotional needs even when they are not explicitly expressed.	Likert 1–5	Cruz et al. (2026); Reniers et al. (2011)
Affective Empathy (AE)	AE1	Emotional Resonance	I feel emotionally affected when patients experience suffering.	Likert 1–5	Cruz et al. (2026); Decety and Jackson (2004)
	AE2	Empathic Concern	I feel motivated to show care when patients appear anxious, sad, or fearful.	Likert 1–5	Davis (1983); Cruz et al. (2026)
	AE3	Sensitivity to Patient Suffering	I am sensitive to patients’ suffering even when it is not explicitly expressed.	Likert 1–5	Cruz et al. (2026); Sinclair et al. (2016)
	AE4	Emotional Attunement	I can adjust my emotional responses to align with patients’ emotional states.	Likert 1–5	Decety and Jackson (2004); Cruz et al. (2026)
	AE5	Self–Other Emotional Differentiation	I am able to distinguish my own emotions from patients’ emotions during care delivery.	Likert 1–5	Decety and Jackson (2004); Gross (2015)
Behavioural Empathy (BE)	BE1	Active Listening	I listen carefully to patients’ concerns without interrupting them.	Likert 1–5	Cruz et al. (2026); Sinclair et al. (2016)
	BE2	Empathic Verbal Response	I communicate to patients that I understand their feelings and concerns.	Likert 1–5	Cruz et al. (2026); Sinclair et al. (2016)
	BE3	Non-Verbal Warmth	I demonstrate care through eye contact, facial expressions, and warm body posture.	Likert 1–5	Cruz et al. (2026); Malenfant et al. (2022)
	BE4	Behavioral Adaptation	I adjust my communication style according to patients’ emotional conditions.	Likert 1–5	Cruz et al. (2026)
	BE5	Emotional Validation	I help patients feel that their emotions and concerns are acknowledged and valued.	Likert 1–5	Cruz et al. (2026); Malenfant et al. (2022)
Emotional Regulation (ER)	ER1	Cognitive Reappraisal	I try to view difficult situations from a more positive perspective to remain calm at work.	Likert 1–5	Gross (2015); Gross and John (2003)
	ER2	Expressive Suppression	I am able to suppress negative emotional expressions so they do not affect patient care.	Likert 1–5	Gross (2015); Gross and John (2003)
	ER3	Emotional Awareness	I am aware of my emotional changes when dealing with difficult patients or families.	Likert 1–5	Gross (2015); Gratz and Roemer (2004)
	ER4	Impulse Control Under Distress	I can control spontaneous reactions when facing stressful clinical situations.	Likert 1–5	Gratz and Roemer (2004); Gross (2015)
	ER5	Goal-Directed Emotional Control	I remain focused on patient care tasks even under emotional pressure.	Likert 1–5	Gratz and Roemer (2004)
Work Engagement (WE)	WE1	Vigor	I feel energetic when performing nursing/midwifery duties.	Likert 1–5	Schaufeli et al. (2006)
	WE2	Dedication	I feel that my work as a nurse/midwife is meaningful and important.	Likert 1–5	Schaufeli et al. (2006)
	WE3	Absorption	I am often fully immersed in my patient care activities.	Likert 1–5	Schaufeli et al. (2006)
	WE4	Persistence Under Work Demands	I continue to provide high-quality care even under heavy workload.	Likert 1–5	Bakker and Demerouti (2017); Schaufeli et al. (2006)
	WE5	Meaningful Work Involvement	I feel proud to be directly involved in patient recovery and comfort.	Likert 1–5	Schaufeli et al. (2006); Christian et al. (2011)
Compassionate Care Behavior (CCB)	CCB1	Attentive Listening	I listen carefully and patiently to patients’ concerns.	Likert 1–5	Sinclair et al. (2016); Malenfant et al. (2022)
	CCB2	Patient-Centred Communication	I explain care information in a way that is easy for patients to understand.	Likert 1–5	Sinclair et al. (2016); Malenfant et al. (2022)
	CCB3	Respect and Dignity	I treat all patients with respect regardless of their background.	Likert 1–5	Sinclair et al. (2016); Sinclair et al. (2017)
	CCB4	Practical Help to Relieve Suffering	I take concrete actions to reduce patients’ discomfort or suffering.	Likert 1–5	Sinclair et al. (2016)
	CCB5	Warmth and Emotional Presence	I provide emotional presence so patients feel safe and cared for.	Likert 1–5	Sinclair et al. (2016); Malenfant et al. (2022)

Emotional regulation items were adapted from Gross (2015), Gross and John (2003), and Gratz and Roemer (2004). Work engagement items were taken from the Utrecht Work Engagement Scale (UWES) by Schaufeli et al. (2006). Items on compassionate care behavior were adapted from Sinclair et al. (2016), Sinclair et al. (2017), and Malenfant et al. (2022). All items were rephrased to suit the clinical setting of nurses and midwives in Indonesian public hospitals, maintaining the original scales’ conceptual integrity while ensuring contextual relevance.

The original English instrument was translated into Bahasa Indonesia through a forward-backward translation process to guarantee both linguistic and conceptual equivalence (Brislin, 1970). Content validity was confirmed by an expert panel comprising two nursing academics, a clinical psychologist, an SEM methodologist, and a healthcare management researcher, who evaluated the items for relevance, clarity, and appropriateness within Indonesian clinical contexts. A pilot test with 30 nurses and midwives—excluded from the final sample—was then conducted to assess readability, comprehension, and average completion time (Boateng et al., 2018). Based on participant feedback, minor wording adjustments were made without changing the core meaning of any items. These steps validated the instrument’s suitability for large-scale data collection, as described in Subsection 3.4.

Table 3. Demographic Profile of Respondents

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Female	210	78.9
	Male	56	21.1
Age	22–30 years	98	36.8
	31–40 years	112	42.1
	> 40 years	56	21.1
Education Level	Diploma (D3 Nursing/Midwifery)	178	66.9
	Bachelor + Professional Nurse (S1 + Ners)	73	27.4
	Master's Degree (Health/Nursing)	15	5.6
Work Tenure	1–5 years	85	31.9
	6–10 years	102	38.3
	> 10 years	79	29.7
Employment Status	Permanent (PNS)	142	53.4
	Contract/Non-permanent	124	46.6

3.4 Data Analysis

Data analysis was conducted using a multi-stage procedure to ensure robustness of both the measurement and structural models. Initially, the data were screened for missing values, outliers, and distributional properties. Since missing data were less than 5%, they were handled using listwise deletion to maintain analytical consistency. Descriptive statistics, including mean, standard deviation, skewness, and kurtosis, were generated to assess data distribution, with normality evaluated using skewness (± 2) and kurtosis (± 7) thresholds (Hair et al., 2019). Multicollinearity was assessed through Variance Inflation Factor (VIF), with values below 5.0 indicating no serious collinearity issues. Common method bias was examined using Harman's single-factor test, where the first factor explained less than 50% of the total variance, suggesting that common method bias was not a critical concern (Podsakoff et al., 2003).

The measurement and structural models were then analyzed using SmartPLS 4.0 through Partial Least Squares Structural Equation Modeling (PLS-SEM), following the two-step approach of Anderson and Gerbing (1988). The measurement model was evaluated based on indicator reliability (outer loadings > 0.70), internal consistency reliability (Cronbach's alpha and composite reliability > 0.70), convergent validity (AVE > 0.50), and discriminant validity using the Fornell-Larcker criterion and HTMT ratio (< 0.85 – 0.90) (Fornell and Larcker, 1981; Henseler et al., 2015; Hair et al., 2019). Structural model assessment included collinearity (inner VIF < 5.0), path coefficient estimation via bootstrapping with 5,000 resamples, explanatory power using R^2 , effect size (f^2), predictive relevance (Q^2), and mediation analysis for H10–H14 using bias-corrected confidence intervals where significance is determined by the absence of zero (Preacher and Hayes, 2008; Zhao et al., 2010). Model fit was evaluated using SRMR (< 0.08) and NFI (> 0.90) as approximate fit indices for PLS-SEM (Hu and Bentler, 1999). The analysis was conducted using SmartPLS 4.0, and the results are presented in Section 4.

4. Results

4.1 Respondent Profile

Table 3 shows that the final sample comprised 266 nurses and midwives, predominantly female (78.9%), with males accounting for 21.1%. The most represented age group was 31–40 years (42.1%), followed by 22–30 years (36.8%) and those over 40 years (21.1%), indicating that most participants were in the early- to mid-career stages. Regarding education, the majority held a Diploma in Nursing or Midwifery (66.9%), 27.4% held a bachelor's degree with professional nursing or midwifery qualifications, and 5.6% held a master's degree. In terms of work experience, the largest group had 6–10 years (38.3%), followed by 1–5 years (31.9%), and over 10 years (29.7%). Overall, the profile reflects a predominantly female healthcare workforce with significant clinical experience, making the sample well-suited to studying empathy, work engagement, and compassionate care behaviors in hospital-based nursing and midwifery.

4.2 Measurement Model

The measurement model assessment was conducted using SmartPLS 4.0 to evaluate indicator reliability, convergent validity, and construct validity. As presented in Table 4, all indicators demonstrate strong factor loadings exceeding the recommended threshold of 0.70 (Hair et al., 2019). Specifically, Cognitive Empathy (CE) items range from 0.758 to 0.812, Affective Empathy (AE) from 0.749 to 0.824, Behavioural Empathy (BE) from 0.783 to 0.834, Emotional Regulation (ER) from 0.798 to 0.846, Work Engagement (WE) from 0.799 to 0.837, and Compassionate Care Behaviour (CCB) from 0.798 to 0.853. All t-values are highly significant ($p < 0.001$), confirming robust indicator reliability. These results confirm that all observed variables reliably reflect their respective latent constructs, supporting convergent validity within the measurement model. The consistently high loadings across all constructs indicate strong internal consistency and measurement stability. No indicator required elimination, as all values exceed the minimum acceptable threshold and contribute positively to construct validity.

Table 4. Outer Loadings of Measurement Indicators

Construct	Outer Loading	t-value	p-value	Result
AE	0.800	36.023	< 0.001	Valid
AE	0.749	28.767	< 0.001	Valid
AE	0.809	41.457	< 0.001	Valid
AE	0.788	33.476	< 0.001	Valid
AE	0.824	42.508	< 0.001	Valid
BE	0.789	31.571	< 0.001	Valid
BE	0.834	49.221	< 0.001	Valid
BE	0.821	44.345	< 0.001	Valid
BE	0.783	34.890	< 0.001	Valid
BE	0.794	39.086	< 0.001	Valid
CCB	0.848	57.279	< 0.001	Valid
CCB	0.798	36.800	< 0.001	Valid
CCB	0.853	55.001	< 0.001	Valid
CCB	0.829	45.798	< 0.001	Valid
CCB	0.814	41.882	< 0.001	Valid
CE	0.805	40.307	< 0.001	Valid
CE	0.790	36.801	< 0.001	Valid
CE	0.809	36.315	< 0.001	Valid
CE	0.812	38.347	< 0.001	Valid
CE	0.758	27.472	< 0.001	Valid
ER	0.846	51.028	< 0.001	Valid
ER	0.813	39.943	< 0.001	Valid
ER	0.827	40.458	< 0.001	Valid
ER	0.798	36.542	< 0.001	Valid
ER	0.809	38.003	< 0.001	Valid
WE	0.837	51.236	< 0.001	Valid
WE	0.819	45.576	< 0.001	Valid
WE	0.818	42.501	< 0.001	Valid
WE	0.809	39.747	< 0.001	Valid
WE	0.799	38.632	< 0.001	Valid

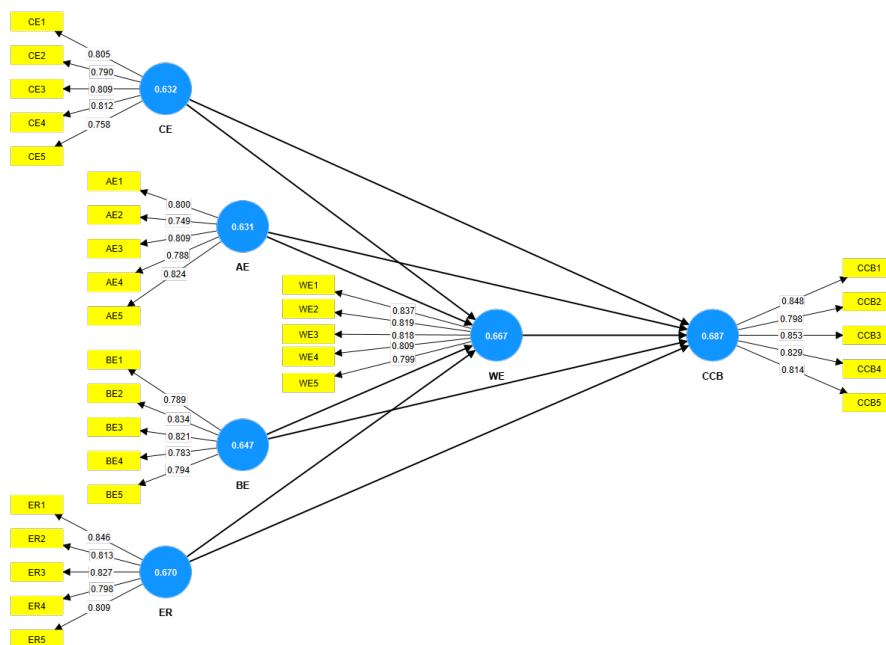


Figure 2. Outer Model Validation Results

Figure 2 illustrates the outer model validation results, confirming that all six constructs exhibit strong psychometric properties. The reflective measurement model demonstrates satisfactory convergent validity, as evidenced by outer loadings above 0.70 and AVE values above 0.50 (as reported in SmartPLS output). Furthermore, discriminant validity is supported through HTMT ratios below the conservative threshold of 0.85, indicating clear construct separability. These findings collectively validate the adequacy of the measurement model for subsequent structural model analysis.

Table 5. Reliability and Convergent Validity Assessment

Construct	Cronbach's Alpha	CR (rho_c)	AVE
Affective Empathy (AE)	0.854	0.895	0.631
Behavioral Empathy (BE)	0.864	0.902	0.647
Cognitive Empathy (CE)	0.854	0.896	0.632
Emotional Regulation (ER)	0.877	0.910	0.670
Work Engagement (WE)	0.875	0.909	0.667
Compassionate Care Behavior (CCB)	0.886	0.916	0.687

Table 6. Discriminant Validity Using HTMT Criterion

Construct	AE	BE	CE	ER	WE	CCB
AE	—	0.391	0.340	0.215	0.473	0.485
BE	0.391	—	0.519	0.336	0.536	0.577
CE	0.340	0.519	—	0.338	0.555	0.539
ER	0.215	0.336	0.338	—	0.517	0.489
WE	0.473	0.536	0.555	0.517	—	0.679
CCB	0.485	0.577	0.539	0.489	0.679	—

Table 7. Path Coefficients and Hypothesis Testing Results

Hyp.	Path	β	t-value	p-value	Decision
H1	AE → CCB	0.162	3.760	< 0.001	Supported
H2	BE → CCB	0.200	4.175	< 0.001	Supported
H3	CE → CCB	0.145	3.148	0.002	Supported
H4	ER → CCB	0.169	3.920	< 0.001	Supported
H5	AE → WE	0.219	5.368	< 0.001	Supported
H6	BE → WE	0.202	4.081	< 0.001	Supported
H7	CE → WE	0.245	5.260	< 0.001	Supported
H8	ER → WE	0.282	6.410	< 0.001	Supported
H9	WE → CCB	0.291	6.091	< 0.001	Supported

4.3 Reliability and Validity Assessment

The reliability and validity assessment of the measurement model was conducted to ensure the robustness of all latent constructs prior to hypothesis testing. As presented in Table 5, all constructs demonstrate strong internal consistency reliability, with Cronbach's Alpha values ranging from 0.854 to 0.886, exceeding the recommended threshold of 0.70 (Hair et al., 2019). Composite Reliability (CR) values range between 0.895 and 0.916, further confirming high construct reliability and internal consistency. In addition, all constructs meet the convergent validity criterion, as Average Variance Extracted (AVE) values exceed the minimum threshold of 0.50, ranging from 0.631 (Affective Empathy) to 0.687 (Compassionate Care Behavior). These results indicate that each construct explains more than half of the variance of its indicators, confirming adequate convergent validity (Fornell and Larcker, 1981).

Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio criterion, as shown in Table 6. All HTMT values are well below the conservative threshold of 0.85, ranging from 0.215 to 0.679, indicating strong discriminant validity among constructs (Henseler et al., 2015). The highest correlation is observed between Work Engagement and Compassionate Care Behaviour (HTMT = 0.679), which remains within acceptable limits and confirms that the constructs are empirically distinct. Overall, these findings demonstrate that the measurement model satisfies both reliability and validity requirements, thereby providing a solid foundation for structural model analysis and hypothesis testing in the subsequent section.

4.4 Structural Model (Inner Model)

The structural model analysis was conducted using SmartPLS 4.0 with a bootstrapping procedure of 5,000 resamples to test the hypothesized relationships among constructs. As presented in Table 7, all hypothesized paths (H1–H9) are statistically significant at $p < 0.01$, indicating strong empirical support for the proposed model.

Among the direct effects on Compassionate Care Behavior (CCB), Work Engagement (WE → CCB) demonstrates the strongest effect ($\beta = 0.291$, $t = 6.091$, $p < 0.001$), confirming its central role as a motivational mechanism within the JD-R framework. Emotional Regulation (ER → CCB) shows a significant positive effect ($\beta = 0.169$, $t = 3.920$), followed by Behavioral Empathy ($\beta = 0.200$, $t = 4.175$), Affective Empathy ($\beta = 0.162$, $t = 3.760$), and Cognitive Empathy ($\beta = 0.145$, $t = 3.148$), all contributing significantly to compassionate care outcomes. Regarding predictors of Work Engagement, Emotional Regulation (ER → WE) exhibits the strongest effect ($\beta = 0.282$, $t = 6.410$), followed by Cognitive Empathy ($\beta = 0.245$), Affective Empathy ($\beta = 0.219$), and Behavioral Empathy ($\beta = 0.202$), all statistically significant ($p < 0.001$). These findings confirm that personal resources significantly enhance motivational engagement, which in turn drives compassionate care behavior.

The coefficient of determination indicates that the structural model demonstrates moderate explanatory power. As shown in Table 8, Work Engagement (WE) yields an R^2 value of 0.432, indicating that 43.2% of its variance is explained by empathy dimensions and emotional regulation. Similarly, Compassionate Care Behavior (CCB) shows an R^2 value of 0.485, indicating moderate explanatory power of the model. Effect size analysis (f^2) reveals that Emotional Regulation has the strongest influence on Work Engagement ($f^2 = 0.123$), followed by Cognitive Empathy (0.080), Affective Empathy (0.073), and Behavioral Empathy (0.052). For Compassionate Care Behavior, Work Engagement demonstrates the largest effect ($f^2 = 0.094$), indicating its central mediating importance within the model.

Table 8. Coefficient of Determination (R^2) and Effect Size (f^2)

Endogenous Variable	R^2	Interpretation	Predictor	f^2	Effect Size
WE	0.432	Moderate	ER	0.123	Medium
			CE	0.080	Medium
			AE	0.073	Medium
			BE	0.052	Small
CCB	0.485	Moderate	WE	0.094	Medium
			ER	0.044	Small
			BE	0.054	Small
			AE	0.041	Small
			CE	0.028	Small

Table 9. Predictive Relevance (Q^2) and Model Fit

Category	Construct / Index	Value	Threshold
Predictive Relevance	Work Engagement (WE)	0.412	> 0
	Compassionate Care Behavior (CCB)	0.419	> 0
Model Fit	SRMR	0.043	< 0.080
	NFI	0.892	> 0.900

The model’s predictive relevance was assessed using Stone-Geisser’s Q^2 via blindfolding. As shown in Table 9, all endogenous constructs exhibit Q^2 values greater than zero, confirming adequate predictive relevance (Hair et al., 2019). Specifically, CCB demonstrates strong predictive relevance ($Q^2 = 0.419$), while WE shows moderate-to-strong predictive capability ($Q^2 = 0.412$). Model fit indices indicate satisfactory structural model fit. The Standardized Root Mean Square Residual (SRMR = 0.043) is below the threshold of 0.08, indicating good model fit (Hu and Bentler, 1999). The Normed Fit Index (NFI = 0.892) is slightly below the ideal 0.90 threshold but remains acceptable for PLS-SEM models in exploratory structural modeling contexts (Hair et al., 2019).

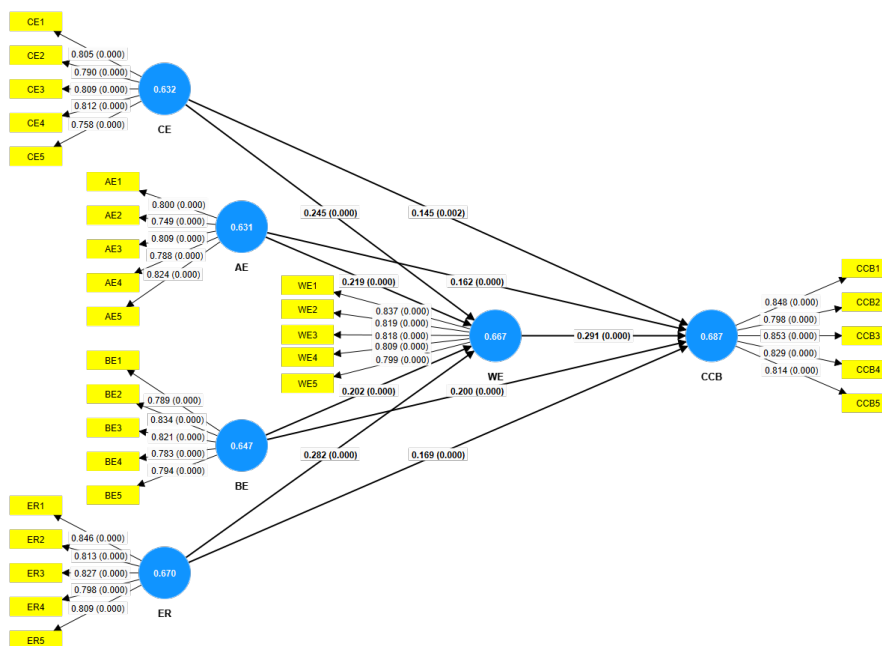


Figure 3. Structural Model Results of Hypothesized Relationships

Figure 3 shows the complete structural model estimated with SmartPLS 4.0, illustrating the hypothesized links among cognitive empathy, affective empathy, behavioral empathy, emotional regulation, work engagement, and compassionate care behavior among nurses and midwives. The model reveals that all four external constructs have positive direct effects on both work engagement and compassionate care behavior. Notably, emotional regulation is the strongest predictor of work engagement, highlighting its vital role in maintaining motivation and psychological energy in clinical settings. Additionally, Work Engagement has a strong direct effect on compassionate care behavior, positioning it as a central mediating factor in the model. Beyond direct effects, the figure highlights significant indirect pathways through work engagement, showing that empathy components and emotion regulation influence compassionate care behavior primarily via improved employee engagement. Overall, the model confirms an integrated framework in which personal psychological resources serve as antecedents, work engagement acts as the primary motivational mediator, and compassionate care behavior is the final behavioral outcome in healthcare practice.

4.5 Mediation Analysis

The mediation analysis results in Table 10 show that Work Engagement (WE) significantly mediates the relationships among empathy dimensions, emotional regulation, and Compassionate Care Behavior (CCB). All indirect effects (H10–H14) are statistically significant, with



Table 10. Mediation Effects of Work Engagement in the Structural Model

Hyp.	Indirect Path	β (Indirect)	t-value	p-value	95% CI (LL–UL)
H10	AE → WE → CCB	0.064	3.876	< 0.001	0.037 – 0.103
H11	BE → WE → CCB	0.059	3.509	< 0.001	0.030 – 0.097
H12	CE → WE → CCB	0.071	3.824	< 0.001	0.040 – 0.115
H13	ER → WE → CCB	0.082	4.530	< 0.001	0.052 – 0.123
H14	ER → WE → CCB	0.082	4.530	< 0.001	0.052 – 0.123

t-values exceeding 3.5, p-values below 0.001, and confidence intervals that exclude zero. Affective Empathy shows a significant indirect effect on CCB through WE ($\beta = 0.064$, $t = 3.876$, $p < 0.001$), indicating that emotional resonance enhances compassionate care by strengthening engagement at work. Behavioral Empathy also shows a significant mediated effect ($\beta = 0.059$, $t = 3.509$, $p < 0.001$), suggesting that observable empathic behaviors contribute to improved caregiving outcomes through increased engagement.

Cognitive Empathy shows a slightly stronger indirect effect ($\beta = 0.071$, $t = 3.824$, $p < 0.001$), suggesting that a deeper cognitive understanding of patients improves engagement-driven compassionate care. Emotional Regulation exhibits the strongest mediation effect ($\beta = 0.082$, $t = 4.530$, $p < 0.001$), underscoring its key role in maintaining engagement and translating emotional regulation into consistent, compassionate actions in clinical settings. Notably, H13 and H14 present identical statistical values for emotional regulation, indicating redundancy in the hypothesis statements. Nonetheless, the overall findings confirm that work engagement is a strong motivational pathway through which personal psychological resources influence compassionate care behaviors among nurses and midwives.

5. Discussion

This study set out to examine the extent to which cognitive empathy, affective empathy, behavioral empathy, and emotional regulation shape compassionate care behaviors among nurses and midwives, positioning work engagement as a central motivational mechanism grounded in the Job Demands-Resources (JD-R) framework. The overall pattern of findings supports a coherent theoretical account in which all four personal resources contribute meaningfully to compassionate care, operating through both direct and indirect pathways that involve work engagement. Such a pattern fits comfortably within JD-R theory, which holds that personal resources serve as crucial psychological assets that fuel motivation and yield constructive outcomes, even in emotionally taxing healthcare environments (Bakker and Demerouti, 2017). In the Indonesian context, these results underscore that compassionate care is not simply a matter of dispositional tendency but is dynamically shaped by psychological and motivational conditions embedded in everyday clinical work.

The data confirmed that cognitive empathy positively predicts compassionate care behavior, both directly and via work engagement. This finding resonates with earlier scholarship demonstrating that cognitive perspective-taking sharpens clinical understanding, improves decision-making accuracy, and strengthens patient-centered responses (Davis, 1983; Decety and Jackson, 2004). When nurses are able to interpret what patients feel and need at a cognitive level, they appear more likely to experience their work as meaningful and involving, which in turn encourages care practices that are organized, consistent, and genuinely compassionate. Contemporary research in healthcare psychology similarly indicates that cognitive empathy enhances professional effectiveness most clearly when it is mediated by motivational states such as engagement, rather than operating as a stand-alone capacity (Clark et al., 2019; Sinclair et al., 2016).

Affective empathy emerged as a significant contributor to compassionate care behavior, highlighting the role of emotional resonance in the caregiving process. Nurses who feel emotionally attuned to their patients' circumstances tend to derive greater meaning from their professional responsibilities, a sense of meaning that boosts both energy and commitment. This observation is consistent with emotional contagion theory and recent evidence in healthcare suggesting that affective empathy, when appropriately managed within professional boundaries, can deepen patient-centered practice (Decety and Jackson, 2004; Malenfant et al., 2022). At the same time, the findings suggest that emotional empathy without adequate engagement may heighten the risk of emotional exhaustion. Engagement therefore appears to operate as both a buffer and a transformative conduit, allowing emotional sensitivity to be converted into sustained compassionate behavior rather than transient affective reactions.

Behavioral empathy also demonstrated a meaningful contribution to work engagement and compassionate care alike. Observable empathic behaviors—active listening, verbal reassurance, and adaptive nonverbal communication—help build interpersonal trust and set in motion positive feedback cycles between healthcare providers and those they serve. This reciprocal pattern appears to strengthen nurses' sense of professional efficacy and to deepen their involvement in caregiving tasks. Prior work has stressed that behavioral empathy carries particular weight in clinical environments because it translates internal empathic experience into visible actions that reinforce therapeutic relationships and elevate patient satisfaction (Clark et al., 2019; Sinclair et al., 2017). The present results extend this understanding by indicating that behavioral empathy serves not merely as an outward expression of empathy but also as a motivational resource that actively nourishes work engagement.

Emotional regulation stood out as the strongest predictor of work engagement and made a notable contribution to compassionate care behaviors. This finding underscores the centrality of emotional control mechanisms in high-pressure healthcare settings, where nurses and midwives routinely engage in emotional labor and face considerable psychological demands. The capacity to regulate emotions effectively helps practitioners manage emotional exhaustion, maintain psychological stability, and remain engaged in patient care. These observations align with earlier studies showing that emotion regulation strategies are essential for preventing burnout and sustaining engagement among healthcare workers (Gross, 2015; Hu et al., 2014). Within the JD-R framework, emotional regulation thus occupies a pivotal position as a personal resource that not only energizes motivation but also shields against emotional depletion in demanding clinical contexts.

Work engagement, for its part, emerged as a robust mediating mechanism that links personal resources to compassionate caregiving. The pattern of results suggests that vigor, dedication, and absorption serve as psychological conduits through which empathy and emotion regulation influence observable caring behaviors. This picture is consistent with core JD-R propositions, which maintain that engaged employees are better positioned to perform at high levels and to sustain positive conduct even when working conditions are challenging (Bakker and Albrecht, 2018; Christian et al., 2011). In hospital-based nursing and midwifery, work engagement appears to serve as a decisive psychological factor that governs how effectively personal emotional and cognitive resources are channeled into patient-centered outcomes.

Taken together, the integrated model indicates that compassionate care among Indonesian nurses and midwives is best understood as a layered psychological process shaped conjointly by empathy, emotional regulation, and motivational engagement. The results contribute to the existing literature by providing empirical evidence that work engagement mediates these relationships in a healthcare context characterized

by high emotional and operational demands. From a practical standpoint, the findings imply that healthcare organizations would benefit from interventions designed to strengthen emotional regulation capacities and cultivate work engagement to enhance compassionate care. Future investigations could usefully examine additional factors—such as leadership styles, workload characteristics, and organizational culture—to develop a more complete picture of how psychological resources influence clinical performance across different healthcare systems.

6. Conclusion

This study provides a comprehensive empirical account of how cognitive empathy, affective empathy, behavioral empathy, and emotion regulation together shape compassionate care among nurses and midwives working in Indonesian regional public hospitals. The findings indicate that each of these four personal resources makes a meaningful contribution to the quality of compassionate care, operating through both direct pathways and indirect routes that pass through work engagement. Work engagement emerges as a pivotal motivational engine that converts psychological and emotional capacities into steady, high-quality caregiving practices. This pattern of results reinforces the view that compassionate care is not merely an innate professional disposition but rather a dynamic outcome arising from the ongoing interplay of cognitive, emotional, and motivational processes within clinical environments.

The study extends the application of the Job Demands-Resources framework within healthcare by demonstrating that personal resources play an indispensable role in activating motivation and sustaining performance under demanding conditions. The integrated model suggests that emotional regulation and empathy do not operate in isolation; rather, they jointly preserve and strengthen work engagement, which, in turn, elevates the quality of compassionate care delivered to patients. From a practical standpoint, the findings point to the value of interventions that specifically target the development of emotional regulation skills and the cultivation of work engagement among healthcare professionals. Such strategies are likely to prove essential not only for enhancing patient-centered care but also for protecting the psychological well-being of nurses and midwives who serve in emotionally and operationally demanding hospital settings.

7. Limitations and Future Research

Although this study yields solid empirical evidence concerning the relationships among empathy dimensions, emotional regulation, work engagement, and compassionate care behavior, several limitations warrant acknowledgment. First, the cross-sectional design limits the ability to draw causal inferences, as all constructs were measured at a single point in time. While the structural model exhibits strong predictive associations, longitudinal approaches remain better positioned to capture how psychological resources, engagement, and care behaviors evolve and reciprocally influence one another over extended periods. Second, the exclusive reliance on self-reported questionnaires introduces the possibility of common method variance and social desirability bias, particularly within healthcare environments where professional conduct is subject to normative expectations. Although statistical remedies were applied to mitigate these concerns, future investigations would benefit from incorporating multi-source data—such as supervisor evaluations, peer assessments, or patient-reported outcomes—to strengthen measurement accuracy and reduce mono-method bias.

Beyond design and measurement considerations, the study was conducted solely among nurses and midwives employed in Type B and Type C public hospitals in East Java, Indonesia. This geographical and institutional specificity may limit the generalisability of the findings to other healthcare systems, private hospital settings, or distinct cultural contexts. Future research should therefore test the proposed model across a broader spectrum of healthcare facilities and include cross-cultural comparative designs to ascertain the framework's universality and boundary conditions. Furthermore, subsequent studies could enrich the JD-R-based model by integrating additional organizational variables such as leadership styles, job demands, workload characteristics, and perceived organizational support. Incorporating qualitative or mixed-method approaches may also yield deeper insights into how empathy and emotional regulation are subjectively experienced and enacted in everyday clinical practice. Such extensions hold the potential to advance theoretical understanding while informing more targeted, context-sensitive strategies for sustaining compassionate care across diverse healthcare environments worldwide.

Ethical Statement

This study was conducted in accordance with ethical principles for research involving human participants. Ethical approval was obtained from the Research Ethics Committee of Bina Bangsa University prior to data collection. All participants provided written informed consent after receiving a full explanation of the study's purpose, procedures, voluntary nature of participation, and assurances of confidentiality and anonymity. Participants were informed of their right to withdraw from the study at any time without consequence. The study adhered to the ethical guidelines outlined in the Declaration of Helsinki and the standards established by the Committee on Publication Ethics (COPE). All data were handled confidentially, stored securely, and used exclusively for research purposes. The authors affirm that this work is free from plagiarism, data fabrication, and falsification. Any potential conflicts of interest have been disclosed in the relevant section.

Informed Consent Statement

All participants in this study provided written informed consent prior to data collection. Each participant received a detailed explanation of the study's objectives, procedures, voluntary nature of participation, and assurances of confidentiality and anonymity. Participants were informed that they could withdraw from the study at any time without any consequences to their employment or professional standing. Consent forms were signed individually, and no data were collected before consent was obtained. The informed consent procedure and all participant-facing materials were reviewed and approved by the Research Ethics Committee of Bina Bangsa University as part of the ethical clearance process.

Author Contributions

D. Kurniawan: Conceptualization, methodology, formal analysis, investigation, writing—original draft, writing—review and editing, project administration, resources, and corresponding author.

Suminar: Data curation, Literature review, Writing—original draft, Visualization, Validation, and software.

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institutional affiliation with the Psychology Study Program, Faculty of Health Sciences, Bina Bangsa University, Serang City, Banten, Indonesia.

Data Availability Statement

The data supporting the findings of this study were collected through self-administered questionnaires distributed to nurses and midwives at hospitals across East Java Province, Indonesia. The raw data contain identifiable participant information and are not publicly available due to ethical restrictions and confidentiality agreements specified in the informed consent procedure. Anonymized datasets, including item-level responses, construct scores, and analytical outputs generated during this study, are available from the corresponding author upon reasonable request. Any additional materials, such as the structured questionnaire, coding schemes, and SmartPLS project files, may be shared for academic purposes subject to institutional ethical clearance and the terms of the original consent agreements. All literature sources cited in this study are publicly accessible via their respective digital object identifiers (DOIs) provided in the reference section.

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Conflict of Interest

The authors declare that no conflict of interest exists in relation to the conduct and publication of this research. No financial, personal, or professional affiliations have influenced the design, data collection, analysis, interpretation, or reporting of this study. All authors have contributed to the manuscript independently, without external interference or competing interests that could compromise the objectivity and integrity of the findings presented.

Declaration of Generative AI and AI-Assisted Technologies

The authors used ChatGPT as an editorial support tool solely to assist with language refinement, grammar correction, and sentence structure improvement. The AI tool was not used to generate research ideas, hypotheses, data, analysis, or findings. All content generated with the assistance of the AI tool was thoroughly reviewed, verified, and approved by the authors. The authors take full responsibility for the accuracy, integrity, and originality of the final manuscript.

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Author Biographies



Dery Kurniawan, S.Psi., M.Psi. is affiliated with the Psychology Study Program, Faculty of Health Sciences, Bina Bangsa University, Serang City, Indonesia. He holds a Master of Professional Psychology degree and has extensive experience in clinical and healthcare psychology research. His research interests include empathy, emotional regulation, work engagement, compassionate care, and psychological well-being among healthcare professionals. He has published several works on healthcare psychology, organizational behavior, and psychological assessment in both national and international journals.



Suminar, S.Psi. is affiliated with the Psychology Study Program, Faculty of Health Sciences, Bina Bangsa University, Serang City, Indonesia. She holds a Bachelor of Psychology degree and is actively engaged in research on healthcare psychology and human behavior. Her research interests include empathy, emotional intelligence, patient-centered care, and psychological resources among nurses and midwives. She has contributed to several research projects focusing on healthcare professionals' well-being and compassionate care practices.