

A phenomenological study of embodied health awareness among employees with cardiovascular risk in Indonesian workplace

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Abstract

Despite comprehensive workplace health programs, employees with high cardiovascular risk often delay follow-up controls. This phenomenological study explores the lived experiences of 12 employees at an Indonesian cement company to understand why perceived risk does not translate into preventive action. Using Moustakas' descriptive phenomenology integrated with the Health Belief Model and Gioia's data structure, which identified four respondent typologies and six theoretical themes. Findings reveal that risk perception is not linear but undergoes a three-phase transformation: normalization of abnormal results, crisis-triggered recalibration through personalized bodily or vicarious cues, and holistic integration of medical, lifestyle, and spiritual strategies. Crucially, informational barriers (symptom ambiguity and false reassurance from negative test results) outweigh structural barriers in corporate settings with adequate health facilities. This study propose that effective Employee Wellness Programs should shift from compliance-based to meaning-based interventions by prioritizing personalized cues, bodily literacy education, and ecosystem support. The study extends the Health Belief Model by conceptualizing preventive health behavior as a dynamic process of embodied meaning-making, in which organizational legitimacy and lived bodily experiences continuously reshape employees' interpretations of cardiovascular risk beyond traditional cognitive health beliefs within collectivistic workplace settings.

Keywords: *phenomenology, health belief model, cardiovascular risk, workplace health, employee wellness.*

Introduction

Cardiovascular disease (CVD) remains the leading cause of mortality worldwide, accounting for approximately one-third of all global deaths, with more than three-quarters occurring in low- and middle-income countries (World Health Organization [WHO], 2023). Indonesia reflects this growing burden, where CVD contributed to 19.42% of all deaths in 2023 and continues to impose substantial healthcare and productivity costs (BPPK Riskesdas, 2023). Industrial workers carry substantial, often undetected cardiovascular burden, in 15.527 North Indian industrial workers, 22% were hypertensive, 85% among them were newly diagnosed during screening (Mohan, 2025). Beyond its clinical consequences, cardiovascular disease (CVD) also represents an important economic and workforce issue. Evidence indicates that CVD is associated with absenteeism, presenteeism, reduced work capacity, early exit from employment, and substantial productivity losses among working populations (Gordois et al., 2016). Consequently, preventing cardiovascular disease is no longer solely a public health priority but has also

become a strategic concern for occupational health management.

The occupational burden of CVD is particularly relevant in heavy manufacturing industries, where employees are exposed to multiple interacting cardiovascular risk factors. Cement manufacturing represents one such setting, combining prolonged sedentary administrative work, physically demanding operational activities, rotating shifts, heat exposure, dust exposure, production targets, and an aging workforce (Al-Zboon, 2021). These occupational characteristics increase cumulative cardiovascular risk while simultaneously requiring employees to maintain optimal physical fitness for operational safety. Compared with many service-based industries, the cement manufacturing environment presents a unique combination of environmental, behavioral, and organizational influences that may shape employees' perceptions of health risk and preventive behavior.

This study was conducted in one of Indonesia's largest cement manufacturing companies, where annual Medical Check-Ups (MCUs) are mandatory for all employees as part of an integrated occupational health surveillance program. Recent MCU data revealed that 148 employees (19%) had a Framingham Risk Score (FRS) exceeding 10%, indicating a substantial probability of developing coronary events within the next decade. Despite comprehensive workplace health initiatives, including centralized health information systems, individualized medical consultations, routine MCUs, electronic reminder systems, and accessible occupational health services, fewer than 20% of high-risk employees attended recommended follow-up examinations. This discrepancy reveals an important paradox in workplace health promotion: objectively elevated cardiovascular risk does not necessarily translate into sustained preventive health behavior, even when structural barriers to healthcare access have largely been minimized.

Understanding this paradox is important because many organizations continue to invest considerable resources in Employee Wellness Programs that primarily emphasize healthcare accessibility, routine screening, and policy compliance. However, persistent low participation in follow-up care suggests that preventive health behavior may depend less on the availability of healthcare services than on how employees interpret, experience, and assign meaning to cardiovascular risk within their everyday occupational and sociocultural contexts. Addressing this issue is therefore essential not only for improving individual health outcomes but also for developing workplace health strategies capable of sustaining long-term employee well-being and organizational productivity.

To understand why objectively high-risk employees remain reluctant to engage in preventive health behavior, an appropriate theoretical framework is required. Among the available health behavior theories, the Health Belief Model (HBM) has become one of the most widely applied frameworks for explaining preventive health behavior across clinical, community, and occupational settings (Rosenstock, 1974). Unlike models that primarily emphasize behavioral intention or social influence, the HBM explains health behavior through individuals' subjective interpretations of health threats and their evaluation of preventive actions. The model proposes that preventive behavior is influenced by six interrelated constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. These constructs provide a comprehensive framework for understanding why individuals may respond differently to identical clinical information despite having comparable objective health risks.

The HBM is particularly relevant to the present study because it directly addresses the central paradox observed in this workplace context. Employees who receive abnormal MCU results and adequate organizational support are expected to perceive greater health risk and seek appropriate follow-up care. However, many continue to postpone or avoid preventive action. While the HBM provides a useful framework for identifying cognitive determinants of health behavior, workplace applications have frequently employed quantitative cross-sectional designs to examine associations between HBM constructs and health behaviors (Carpenter, 2010; Mohammadnabizadeh et al., 2022). Such designs may provide limited insight into the dynamic and context-dependent nature of health beliefs and their relationship with subsequent behavior (Taflinger & Sattler, 2024). Those provide valuable evidence regarding associations among HBM constructs but offer limited understanding of how health beliefs evolve through employees' lived experiences within specific organizational environments.

Recent empirical studies have examined cardiovascular risk perceptions and preventive behaviors in occupational settings. Quantitative studies among workers have applied the Health Belief Model to assess perceived susceptibility, perceived barriers, perceived severity, and other cognitive determinants of cardiovascular preventive behaviors (Amdemariam et al., 2022; Mohammadnabizadeh et al., 2022). Study have identified limited recognition and understanding of cardiovascular disease risk among workers (Webster, 2010). Ndile et al. (2026) stated that limited resources, perceived risks, and lack of organizational support hinder the utilization of cardiovascular screening services. Collectively, these studies demonstrate that employees' responses to cardiovascular risk are influenced not only by medical information but also by subjective interpretations of health, workplace experiences, and organizational contexts.

Despite these important contributions, several limitations remain. First, most HBM-based workplace studies employ cross-sectional survey designs that treat health beliefs as static cognitive variables rather than evolving lived experiences. Second, existing qualitative studies primarily identify barriers to preventive behavior without adequately explaining the dynamic processes through which objective medical information becomes personally meaningful and ultimately influences health-related decision-making. Third, limited attention has been given to collectivistic organizational contexts, particularly within heavy manufacturing industries in developing countries, where organizational legitimacy, workplace culture, shared social experiences, and embodied health awareness may substantially shape employees' responses to cardiovascular risk. Consequently, current knowledge remains insufficient to explain how employees continuously construct, negotiate, and transform perceptions of cardiovascular risk over time.

Addressing these gaps is important both theoretically and practically. From a theoretical perspective, exploring employees' lived experiences may extend the explanatory capacity of the Health Belief Model beyond its traditional cognitive constructs by incorporating the dynamic processes through which risk perceptions are embodied, socially negotiated, and organizationally reinforced. From a practical perspective, understanding these processes may assist organizations in designing Employee Wellness Programs that move beyond compliance-oriented approaches toward interventions that foster meaningful engagement with preventive health behavior.

Accordingly, this study seeks to answer the following research question: Why do

employees with objectively high cardiovascular risk remain reluctant to engage in routine follow-up examinations despite adequate workplace health facilities? To address this question, the study adopts Husserlian descriptive phenomenology analyzed using Moustakas' seven-step approach and interpreted through Gioia's inductive data structure. Rather than measuring predefined health beliefs, this approach explores how employees construct, interpret, and transform health meanings through their lived experiences. By integrating phenomenological inquiry with the Health Belief Model, this study contributes to qualitative occupational health literature by proposing an extended understanding of preventive health behavior in which embodied health awareness and organizational legitimacy function as dynamic mechanisms that connect perceived risk with sustained preventive action within collectivistic workplace cultures.

Methods

This study employed a qualitative descriptive phenomenological design following Moustakas (1994), rooted in Husserl's philosophy of returning "to the things themselves" (*zu den Sachen selbst*). Phenomenology was selected because the aim of this study was not to generate formal theory or explain behavioral processes, but to understand the essence of employees' lived experiences in making meaning of cardiovascular risk (Dodgson, 2023). Guided by the premise that qualitative methods are essential for exploring the 'how' and 'why' of complex social phenomena, this phenomenological study seeks to uncover rich, nuanced insights into the embodied health awareness of employees that quantitative metrics alone cannot capture (Sierpe, 2025). Contemporary qualitative research in organizational and health contexts emphasizes the critical balance between methodological rigor and contextual relevance, advocating for flexible approaches capable of capturing the complexity of real-world embodied experiences while maintaining structured analytical processes (Kressman, 2025).

Primary data were collected during March 2026. Participants were initially recruited using maximum variation sampling, which deliberately selected employees representing diverse job roles, organizational tenure, age groups, cardiovascular risk profiles, and patterns of follow-up behavior to capture a broad range of lived experiences regarding cardiovascular risk perception. Potential participants were identified from company Medical Check-Up (MCU) records in collaboration with the occupational health clinic, ensuring variation in demographic and clinical characteristics rather than statistical representativeness.

Maximum variation sampling was subsequently complemented by snowball sampling to identify information-rich participants whose experiences might not have been evident from clinical records alone (Dahal, 2024). The initial participants (seed participants) were employees who met the inclusion criteria and represented contrasting patterns of health behavior, including those who consistently avoided follow-up consultations and those whose health behaviors changed following significant health-related events.

Participant recruitment continued concurrently with data analysis until sufficient information power was achieved, indicated by the recurrence of experiential patterns, the absence of substantively new phenomenological meanings, and the stabilization of emerging themes across interviews (Hossain et al, 2024). Recruitment was concluded after twelve participants because subsequent interviews confirmed rather than expanded the

existing conceptual structure, suggesting that additional interviews were unlikely to provide substantially new insights into employees' lived experiences of cardiovascular risk perception.

Table 1. Informants Profile

No	Age, tenure, Band	Area	Risk Factor	MCU 2025 and follow up	Work Shift	Education	MCU Status
1	35, 16, 4	Production	Hypertension, hyperlipidemia	Completed both	Reg	Senior High School	Fit With Note
2	48, 29, 4	Production	Hyperlipidemia, obesity	Completed both	Reg	S1	Fit With Note
3	48, 29, 4	Production	Hypertension, hyperlipidemia, obesity	Completed MCU only	Reg	Senior High School	Fit With Note
4	43, 17, 3	Production	Hyperlipidemia, smoking	Completed both	Reg	S1	Fit With Restriction
5	51, 32, 3	Supporting	Hyperlipidemia, obesity	Completed both	Reg	S1	Fit With Note
6	49, 28, 4	Production	Hypertension, smoking	Completed both	Reg	Senior High School	Fit With Note
7	55, 32, 4	Supporting	Hyperlipidemia, smoking	Completed both	Reg	Senior High School	Fit With Note
8	52, 32, 4	Production	Hyperlipidemia, obesity	Completed both	Reg	Senior High School	Fit With Note
9	51, 32, 3	Supporting	Hypertension, hyperlipidemia	Completed MCU only	Reg	Senior High School	Fit With Restriction
10	38, 13, 4	Production	Hyperlipidemia, smoking, obesity	Completed both	Reg	S1	Fit With Note
11	51, 31, 4	Production	Hyperlipidemia, smoking, obesity, hypertension, high blood sugar	Completed both	Shift	Senior High School	Fit With Restriction
12	36, 16, 4	Production	Hyperlipidemia, smoking, hypertension, high blood sugar	Completed MCU only	Reg	S1	Fit With Restriction

Inclusion criteria for employee participants were: (1) aged 30–56 years; (2) the presence of two or more cardiovascular risk factors (hypertension, dyslipidemia, smoking history, or

elevated blood glucose) documented in company Medical Check-Up (MCU) records; and (3) inconsistent follow-up behavior, operationalized as (a) no post-MCU consultation despite abnormal findings, (b) partial adherence to medical recommendations, or (c) delayed engagement in follow-up examinations after a critical health-related event.

Data were collected through: (1) semi-structured in-depth interviews (60–90 minutes each), guided by HBM constructs but open to emergent themes; (2) participatory observation during MCU sessions; (3) document review of company health policies; and (4) field notes capturing non-verbal and contextual dynamics. Interviews were audio-recorded with consent, transcribed verbatim, and anonymized.

This study employs a multi-layered qualitative design, with each methodological framework serving a distinct analytical purpose. Husserl's phenomenological philosophy provided the foundational epistemological stance, emphasizing a return to lived experience (*zu den Sachen selbst*) and the deliberate bracketing of clinical preconceptions. Moustakas' (1994) seven-step procedure operationalized this stance, guiding the systematic identification of thematic essences through horizontalization, clustering, and structural/textural descriptions. The Health Belief Model (HBM) was applied not as a testing framework, but as a sensitizing construct to orient initial data exploration and ensure that participants' narratives of risk perception, barriers, and action triggers were systematically mapped against established health behavior dimensions.

Gioia et al. (2013) methodology was concurrently utilized to maintain inductive rigor, structuring first-order participant terms into second-order themes and aggregate dimensions while preserving phenomenological integrity. Finally, trustworthiness criteria governed the overall methodological rigor, ensuring that the interpretive process remained transparent, auditable, and grounded in participant validation. Credibility was established through data triangulation (integrating in-depth interviews, participatory observations, and document reviews) and member checking with four participants to validate interpretive accuracy. Dependability was maintained via a consistent audit trail documenting bracketing notes, transcription protocols, and coding decisions following Moustakas' (1994) seven-step analysis. Confirmability was addressed through researcher reflexivity; given the researcher's position as a company physician, assumptions were explicitly bracketed and documented in a reflective journal to minimize bias during data collection and analysis. Transferability was supported by thick descriptions of the organizational context and participant profiles, allowing readers to assess applicability to similar industrial settings. The company's Center of Learning & Development granted ethical clearance, and the study maintained informed consent and confidentiality throughout the research process. The final sample comprised 12 participants, which aligns with established phenomenological guidelines recommending 6–15 informants to achieve data saturation while allowing for deep, iterative analysis of lived experience. Recruitment ceased when no new thematic patterns, experiential dimensions, or meaning-making trajectories emerged across three consecutive interviews. To enhance transparency and contextualize the phenomenological narratives, Table 1 presents the demographic, occupational, and health profiles of all participants; all are male. To enhance analytical transparency, Table 2 summarizes how each participant was assigned to one of the four phenomenological typologies. We based classification on cross-case comparisons of participants' dominant risk attribution, coping orientation, and behavioral trajectory over time, rather than on demographic or clinical characteristics alone.

Result and Discussions

This section presents the phenomenological findings derived from in-depth interviews with 12 employees identified with high cardiovascular risk. Participants ranged in age from 35 to 55 years, with organizational tenure between 13 and 32 years. The majority worked in production units (n=9) and held mid-level positions (Band 4, n=9). All participants completed the 2025 routine Medical Check-Up (MCU); however, follow-up compliance varied, with 9 employees engaging in further control and 3 discontinuing after initial results. Risk factors were multifactorial, predominantly dyslipidemia and hypertension. Most participants worked regular shifts (n=11) and held 'Fit with Note' work status (n=8), indicating suitability for work with specific health recommendations. This variation in follow-up behavior and risk profile provided a rich context for exploring the phenomenology of health control reluctance.

The diversity of participants' demographic and occupational characteristics strengthened the credibility of the phenomenological findings by capturing a wide range of experiences across different stages of cardiovascular risk awareness and health behavior. Although most participants shared similar clinical risk profiles, their responses to identical Medical Check-Up (MCU) findings differed considerably, suggesting that objective cardiovascular risk alone is insufficient to drive lifestyle modifications or health-seeking behaviors (Ndumele, 2020). So that the risk score that been informed to the participants through email reminder, align with 2021 ESC guideline stated that communication of risk score alone has limited impact on lifestyle behavior change (Visseren, 2021). This observation supports previous studies indicating that individuals often underestimate their disease risk despite abnormal clinical indicators (Aycock, 2019), indicating that subjective interpretation of health information exerts a stronger influence on preventive action than objective medical evidence alone.

The predominance of production workers in this study also provides important contextual insights. Employees working in cement manufacturing environments are exposed not only to occupational hazards (Ssemuddu, 2025; Hapsari, 2026) but also to organizational cultures that value endurance, productivity, and resilience. Cardiovascular disease and diabetes showed no work-functioning association in early working life but significant impairment in mid and late working life, suggesting delayed recognition (Van Zon, 2023).

Similar observations have been reported where organizational routines and workplace culture systematically reduce employees' perceived susceptibility to cardiovascular disease (CVD) despite documented risk factors, through stigma avoidance, economic prioritization, and culturally embedded coping behaviors (Kim, 2020). Organizational culture itself significantly influences perceived stress levels, which in turn affect cardiovascular health through chronic catecholamine elevation (Dóra, 2019; Shuck, 2022)

However, whereas previous qualitative studies primarily described individual barriers such as limited knowledge, low perceived susceptibility, or practical constraints to health screening (de Waard, 2018), the present study demonstrates that these barriers are continuously negotiated through employees' interactions with workplace culture, organizational legitimacy, and embodied experiences. Consistent with qualitative evidence on post-stroke experiences stated that embodied health awareness among at-risk employees is not merely about functional restoration, but involves a profound process of 're-embodiment' and renegotiating one's relationship with their physical body (Lo, 2023).

This suggests that preventive health behavior in occupational settings is not simply a consequence of individual cognition but also of ongoing meaning-making within organizational contexts. Gender also regulates the interplay between self-efficacy and health behaviors, recent study suggests that workplace interventions for cardiovascular risk mitigation must adopt gender-specific strategies rather than a one-size-fits-all approach (Sheng, 2025)

Table 2. The Comparison

No	Typology	Core Meaning	Risk Attribution	Coping Orientation	Behavioral Trajectory
R1	Lifestyle Preferer	Health can be maintained independently	Stress and lifestyle	Exercise, diet	Stable
R2	Converted	Health crisis changed my perspective	Serious illness	Routine medical follow-up	Changed after crisis
R3	Normalizer	High cholesterol is normal with age	Aging	Minimal action	Stable
R4	Converted	Witnessing colleague's death increased awareness	Sudden death	Medical adherence	Changed after vicarious event
R4	Converted	Witnessing colleague's death increased awareness	Sudden death	Medical adherence	Changed after vicarious event
R5	Converted	ICU admission transformed health beliefs	Personal illness	Active prevention	Changed after crisis
R6	Converted	Symptoms became a wake-up call	Bodily sensations	Routine follow-up	Changed after symptoms
R7	Lifestyle Preferer	Healthy lifestyle is sufficient	Lifestyle	Exercise	Stable
R8	Holistic Seeker	Health is physical and spiritual	Medical + spiritual	Integrated approach	Stable holistic adaptation
R9	Normalizer	Work is more important than health checks	Work demands	Delay follow-up	Stable
R10	Lifestyle Preferer	Self-control through diet	Personal responsibility	Lifestyle modification	Stable
R11	Converted	Colleague's death triggered awareness	Vicarious experience	Medical adherence	Changed after event
R12	Converted	Listening to bodily signals	Embodied awareness	Integrated medical care	Changed after bodily cues

Furthermore, the variation in follow-up behavior observed among participants despite comparable cardiovascular risk profiles reinforces the limitations of interpreting preventive health behavior solely through static cognitive constructs. While previous Health Belief Model (HBM)-based studies have consistently identified perceived susceptibility mediates the effect of measures on health decisions, and perceived benefits increase the effect of preventive measures (Taflinger & Sattler, 2024) the present findings suggest that these perceptions are continuously reconstructed through embodied experiences, organizational interactions, and culturally embedded interpretations of health. These findings therefore extend the explanatory scope of the Health Belief Model. Rather than viewing perceived susceptibility, perceived barriers, and cues to action as relatively stable cognitive constructs, this study demonstrates that these perceptions evolve through embodied health awareness and are continually shaped by organizational legitimacy and collectivistic workplace culture. Consequently, preventive health behavior should be understood as a dynamic process of meaning-making rather than a static outcome of individual health beliefs. In recent study, facilitators were described as resources that supported disease self-management and included family, social networks, healthcare professionals, and religious beliefs (Nguyen, 2022).

Taken together, these findings contribute to occupational health literature by shifting the focus from identifying determinants of preventive behavior toward understanding how employees construct the meaning of cardiovascular risk throughout their working lives. This interpretive perspective complements existing HBM-based research by explaining not only which beliefs influence preventive behavior but also how those beliefs emerge, evolve, and are reinforced through lived bodily experiences and organizational environments. Bodily experiences function as internal cues that activate and reshape HBM constructs (Ye, 2026), while organizational culture reinforces or suppresses these beliefs through collective norms and systemic pressures (Hodgson, 2024; Chen, 2026). Consequently, the study offers a more contextually grounded understanding of workplace health behavior in collectivistic industrial settings.

Analysis revealed four distinct typologies reflecting how employees constructed meaning around cardiovascular risk throughout their lived experiences. These typologies did not represent predefined categories but emerged inductively through iterative phenomenological analysis using Moustakas' descriptive approach and Gioia's data structure. During cross-case analysis, individual narratives were first examined to identify significant statements and meaning units, which were subsequently clustered into shared experiential patterns. Participants were then compared across three analytical dimensions: (1) attribution of cardiovascular risk (how participants explained abnormal health findings), (2) dominant coping orientation (how they responded to perceived risk), and (3) behavioral trajectory over time (whether their responses remained stable or changed following significant life events). Employees who demonstrated similar configurations across these dimensions were grouped into the same typology.

The Converted ($n = 6$) were characterized by an initial tendency to normalize cardiovascular risk, followed by a profound behavioral transformation after experiencing a critical health-related event, such as intensive care hospitalization, severe personal illness, or witnessing a colleague's sudden death. Their defining criterion was a clear shift from passive acceptance toward active advocacy and sustained preventive behavior. The

Normalizers ($n = 2$) consistently interpreted abnormal clinical findings as ordinary consequences of aging, heredity, or routine occupational fatigue. Because they remained largely asymptomatic, they experienced little emotional urgency and maintained minimal engagement with recommended follow-up despite repeated abnormal MCU results. Kim et al in 2020 documented that optimistic bias leads workers to avoid health checks to demonstrate healthiness to colleagues, but no intervention study has tested whether dismantling this bias increases screening participation.

The Lifestyle Preferers ($n = 3$) acknowledged their cardiovascular risk but expressed strong confidence in their ability to manage the condition through self-directed lifestyle modifications, particularly dietary changes, exercise, and weight control. Unlike the Converted group, they viewed medical follow-up as supplementary rather than essential, reflecting a coping orientation centered on personal self-management. The Holistic Seeker ($n = 1$) represented a unique experiential pattern in which cardiovascular risk was interpreted through an integrative perspective combining medical adherence, embodied health awareness, family support, and spiritual beliefs. Rather than privileging one approach, this participant continuously negotiated preventive behavior through interconnected physical, psychological, social, and spiritual meanings.

Collectively, these typologies illustrate that employees' responses to cardiovascular risk cannot be adequately explained by objective clinical status alone. Instead, preventive health behavior emerged from distinct processes of meaning-making shaped by previous experiences, organizational culture, personal beliefs, and the evolving interpretation of bodily sensations over time. Following the identification of the four participant typologies, the analysis progressed from describing variations in employees' lived experiences toward developing a broader conceptual understanding of cardiovascular risk perception. While the typologies captured distinct experiential patterns across participants, they were not intended as the final analytical outcome. Instead, they served as an interpretive foundation that guided subsequent cross-case comparison to identify shared meanings underlying different participant experiences. This second stage of analysis moved beyond classifying participants to examining recurring concepts and experiential processes that transcended individual typologies, thereby enabling theory development.

To ensure transparency in this inductive analytical process, Table 4 presents selected examples of the mapping between verbatim interview excerpts and first-order concepts. Following Gioia et al. (2013), these concepts intentionally retained participants' own language to preserve the phenomenological integrity of their lived experiences while providing an explicit audit trail from raw data to conceptual interpretation. Rather than representing isolated quotations, the selected examples illustrate how similar expressions emerging from different participant typologies were compared, clustered, and interpreted during cross-case analysis.

These first-order concepts subsequently served as the analytical foundation for developing second-order themes through iterative comparison, abstraction, and researcher interpretation. At this stage, the analysis shifted from participants' everyday expressions toward theoretically meaningful concepts that explained common experiential processes across cases. Finally, these second-order themes were synthesized into aggregate dimensions informed by the Health Belief Model (HBM), allowing phenomenological insights to contribute to broader theoretical development rather than remaining

descriptive accounts of individual experiences.

Table 3. The Four Typologi of Risk Response

Typology	n	Key Characteristics	Representative Quote
The Converted	6	Crisis-triggered transformation; post-crisis advocacy	"Don't be a superman... some friend often went hard sickness when didn't do the follow up." (R5)
The Normalizers	2	Chronic risk normalization; attribution to genetics/age	"I have known than that was very usual things... since 1994." (R9)
Lifestyle Preferers	3	Self-management focus; preference for non-medical approaches	"I had tried herbal medicine." (R7)
Holistic Seeker	1	Integrative approach; embodied + spiritual + medical	"My body is my laboratory... Allah is very loving myself." (R12)

Figure 1 presents the Gioia Data Structure, illustrating the analytical progression from participants' verbatim narratives to first-order concepts, second-order themes, and aggregate dimensions. Rather than depicting participant categories, the figure demonstrates how shared meanings identified across the four participant typologies were synthesized into six higher-order theoretical themes that extend understanding of cardiovascular risk perception within the Health Belief Model framework.

The first aggregate dimension, Perceived Susceptibility, emerged from first-order concepts that captured employees' initial responses to cardiovascular risk indicators. These concepts clustered into two second-order themes: The Normalization and The Judging Risk. Participants consistently described an absence of symptoms and normalization of abnormal results ("Almost no symptomp" - R12; "Not too much thinking about high blood pressure" - R1), reflecting a psychological denial process where risk was dismissed due to lack of physical manifestations. Industrial workers face elevated cardiovascular risk from shift work, physical burden, and organizational stress, yet workplace culture and routines systematically reduce their perception of personal susceptibility (Kim, 2020; Mohammadnabizadeh, 2022).

Simultaneously, employees engaged in risk attribution, questioning whether risks originated from genetic factors, work stress, or family history ("... From too strict mind" - R12). This dimension reveals that perceived susceptibility is not automatically formed from MCU results but requires active cognitive and emotional processing, often delayed by asymptomatic normalization and external attribution patterns. Early CVD risk screening is crucial, but tailored support and a proper understanding of personal risk are essential to promote healthy behaviors (Guo, 2023). Taflinger in 2024, stated that perceived susceptibility dynamically adapts to situational environmental factors, mediating the relationship between preventive measures and behavioral intentions. And the R12 recognized the stressfull pattern of mind, this aligned with recent finding that stress in adulthood has an important role as a disease trigger in individuals with high atherosclerotic plaque burden and as a determinant of prognosis and outcomes in those with pre-existing cardiovascular or cerebrovascular disease (Kivimäki, 2017). Population-based interventions are effective in promoting physical activities for groups based on age, sex, and race, for high-, middle-, and low-income populations, and for different environments, such

as worksites in general (Visseren, 2021).

Table 4. The Verbatim and 1st Order Concepts

The Verbatim	The 1 st Order Concepts
"The symptom was almost none" R12	Absence of symptom, normalization of abnormal result, denial process
"High blood pressure, not so much thinking about it" R1	
"Probably my condition is related to genetic" R9	Where is the risk from? Genetic? Stress? Family?
"Maybe 50% came from my mind that was too strict" R12	
"The sleeping cholesterol for year, and no follow up for that" R5	The dormant risk vs the peer passed away vs seeing educational flyer
"That, few friends had cardiac death, became little aware" R2	
"By regular control, my self also got no worry" R6	Periodic monitoring to reassure self, and support company to have good performance
"When treadmill result was negative, I thought it was good, so I back to the bad habit" R8	The good result doesn't mean you can be free
".. but because of the corporate insurance rule, so I was referred to another hospital" R8	Corporate insurance
"... Don't be a superman" R5	Human is not superman
"I was thought that my heartburn sign of gerd, but the real, that is the sign of heart disease" R8	Ambiguity of symptom, and lack of health info
"Then was because my friend passed away, Mr. A" R7	Educational poster, the death of friend
"Because I am now still young" R12	Symptom felt by the body, either you young or old
"In this year I will have pension" R7	
"Suddenly I felt chest pain" R6	Post crisis advocacy, and the idol role
"Rasulullah was very healthy person" R12	
"I don't want another person undergoing the same sickness as me" R6	Self management, therapy agency
"The body weight must be maintained" R10	
"I ate beet, vegetables" R1	Herbal and spiritual connect
"As supporting, you can go to Kyai, Ustadz" R5	
"My body stamina is always low, so I limit myself from heavy sport" R4	Know the body limit, and peers' role in smoking
"It was my friend offering me cigar.. " R6	
"My wife has the same problem, so we support each other" R3	Family and at work
"The heavy load on work at that time ..." R9	The shift, sedentary, and work stress
"The shift work, night shift had very high impact on health" R5	
"The nutritional rule, should be contained in employee food management" R3	Health literacy, EWP design, and KPI support
"Health campaign, could be addressed more" R4	

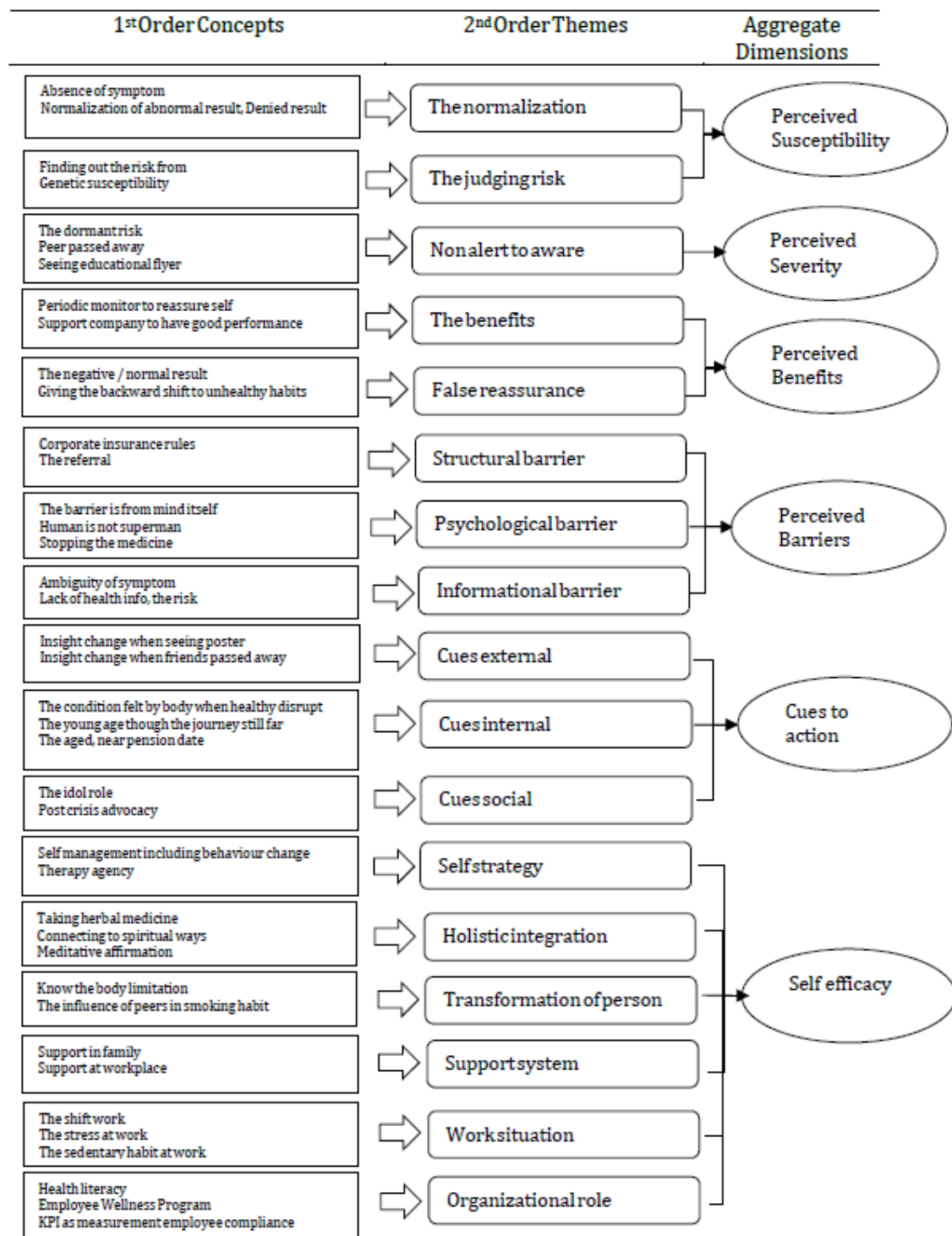


Figure 1. Data Structure

The second, Perceived Severity emerged from first-order concepts describing the transformation from dormant risk awareness to acute consciousness. The second-order theme Non Alert to Aware (From Neglect to Awareness) captured this pivotal shift, illustrated by statements like "The silent cholesterol" (R5) contrasted with "Very changing after the cardiac attack" (R5). Participants described how abstract risk indicators became concrete through multiple pathways: witnessing educational posters, experiencing peer

deaths, or confronting personal health crises. This dimension demonstrates that severity perception is not static but undergoes recalibration when abstract clinical data is translated into functional consequences, whether through threats to work performance ("The work performance maintained good" - R1) or sudden mortality awareness triggered by colleague deaths. The phenomenological data reveals severity as a dynamic construct requiring emotional engagement beyond cognitive acknowledgment, this aligned with Liu in 2025, that perceived severity functions as a dynamic construct shaped by emotional responses, particularly fear, anxiety, and anticipated guilt, rather than a static cognitive acknowledgment of disease seriousness.

The third aggregate dimension, Perceived Benefits, encompasses first order concepts reflecting employees' evaluation of health control activities. These concepts organized into two contrasting second-order themes: Beneficial for Me and Company and False Reassurance. Participants articulated multidimensional benefits including clinical stability ("Blood pressure stabilized and monitored" - R6), psychological peace of mind ("By regularly control, I felt safer" - R6), and organizational legitimacy ("this is support from company" - R12). However, the data also revealed a paradoxical phenomenon where negative test results created false reassurance ("When negative result in treadmill.." - R8), leading to lifestyle relapse. This dimension extends traditional HBM by demonstrating that perceived benefits in workplace contexts include psychosocial and organizational dimensions beyond clinical outcomes, while also revealing that psychological benefits can become counterproductive if they foster complacency rather than sustained vigilance. Perceived benefits increase the effect of preventive measures (Taflinger & Satler, 2024).

Perceived Barriers emerged from first-order concepts describing obstacles to health control participation, clustering into three second-order themes: Structural, Psychological, and Informational barriers. Contrary to assumptions that cost and access dominate barriers, participants with corporate insurance reported minimal structural obstacles ("No problem in insurance" - R5). Instead, informational barriers predominated: symptom ambiguity ("The symptom of GERD and heart attack is similiar" - R8), limited health literacy ("I was just thought about stroke" - R6), and threshold misconceptions. Psychological barriers included overconfidence ("Don't be a superman" - R5), medication fatigue ("bored with medication" - R6), and stress attribution. This dimension challenges traditional HBM applications by demonstrating that in corporate settings with adequate facilities, informational and psychological barriers outweigh structural ones, requiring interventions focused on health literacy and cognitive reframing rather than merely improving access. Similar to research from Mansoor in 2022, in adequately resourced corporate settings, informational and psychological barriers often dominate, while in lower-resource settings structural barriers remain substantial. In small-medium-sized workplaces, lack of identification and knowledge of cardiovascular risks, at the intrapersonal level and employer "lack of understanding about importance of CVD management", so at the organizational level further diminish risk awareness (Kim, 2020).

The fifth aggregate dimension, Cues to Action, emerged from first-order concepts describing triggers that prompted health behavior change. These concepts organized into three structured second-order themes: Cues External, Cues Internal, and Cues Social. External cues included educational posters and colleague deaths ("My dearest friend passed away because severe sickness" - R11), while internal cues involved personalized bodily

sensations ("Sensation of tingling when blood sugar above 300" - R12; "my body is my laboratory" - R12). Social cues encompassed post-crisis advocacy behaviors and role modeling ("I don't want another people felt the same sickness" - R6). The phenomenological data reveals a clear hierarchy of effectiveness: embodied and interpersonal cues possess higher perceptual validity because they generate affective responses and spatial presence that passive external communications cannot replicate (Jung, 2019), as bodily sensations were immediate, personal, and could not be ignored like email reminders. Cues to action are embedded in ongoing interpersonal interactions with peers, family, and healthcare professionals rather than discrete triggers (Ye, 2026). This dimension extends HBM by demonstrating that cue effectiveness is not uniform but follows a structured continuum wherein personalized, embodied experiences penetrate normalization more effectively than generic organizational communications.

The final aggregate dimension, Self-Efficacy, emerged from the richest set of first-order concepts (29 concepts), clustering into six second-order themes: Self Strategy, Holistic Integration, Transformational, Support System, Work Situation, and Organizational Role. Participants described individual agency through self-management ("To maintain food, physical activity" - R7), holistic integration of medical and spiritual approaches ("As supporting, you can go to Kyai, Ustadz, make Dua" - R5), and micro-adaptations at work ("Every two hours I walk from my sitting working station" - R7). Crucially, efficacy was ecosystem-supported rather than purely individual: family support ("My wife has the same problem, so we support each other" - R3), workplace accommodation, and organizational policies (KPI support - R9) enabled sustained action. This dimension reconceptualizes self-efficacy from an individual belief to "Holistic Agency", extending HBM's applicability to collectivistic workplace cultures. Organizational health culture is significantly associated with cardiovascular disease prevention behaviors among office workers (Pahn, 2021). Self-efficacy evolves over time through successful lived experienced, functioning as both an outcome and a driver of sustained health behavior (Ye, 2026). Synthesizing phenomenological findings with HBM constructs as a sensitizing lens, this study identified six interpretive themes that capture the dynamic, embodied, and socially situated nature of employees' health meaning-making. Rather than presenting testable hypotheses, these themes articulate the *essential structures of lived experience* as they unfold across time, bodily awareness, and organizational context

Theme 1: Perceived Susceptibility as a Dynamic Process of Recalibration. Perceived susceptibility is not linearly formed from MCU results but undergoes 'recalibration' triggered by personalized cues (bodily sensations) or vicarious experiences (colleague death), penetrating initial normalization mechanisms. Traditional HBM treats susceptibility as a relatively static perception (Janz & Becker, 1984). A major health shock to an individual, a new diagnosis (e.g., diabetes) or a serious adverse health event (e.g., heart attack), by changing subjective probabilities leads to some healthier behaviors, however, sometimes only temporarily (Sloan, 2024). Our data reveal a dynamic three-phase process: (1) Normalization, where abnormal results are dismissed as "normal" due to absence of symptoms. This was vividly described by R9, who noted, "I have known than that was very usual things... since 1994", indicating decades of normalized risk. Similarly, R10 stated, "Actually, just as usual, I knew the value was high but not too influenced about the effect". (2) Recalibration, where strong cues shatter normalization. R5 expressed shock despite a

healthy lifestyle: "Very shocked, because I often doing sport as well... but the doctor stated that myself had heart disease". (3) Sustained Awareness, Integration, maintained through self-monitoring. R12 exemplified this with, "My body alarm when glucose over 300, is tingling sensation". In collectivistic, high power distance Indonesian workplaces, vicarious cues, observing empowered behavior rather than directly experiencing it, can foster behavioral change and performance as effectively as direct empowerment approaches (Sumpter, 2023). R7 noted, "Worrier, since friend in workplace suddenly got sick, heavy sick, bad condition", showing how social trauma penetrates denial where clinical data failed.

Theme 2: Perceived Severity Grounded in Functional and Existential Awareness. Perceived severity increases significantly when abstract risk (MCU numbers) is translated into concrete consequences for work performance or sudden mortality awareness, not merely medical diagnosis. While HBM posits that severity perceptions motivate action, our findings identify two contextual amplifiers: Work Productivity Threat and Sudden Mortality Awareness. R1 linked health directly to labor capacity: "This work performance to be maintained good". This sentiment was echoed by R9, who recognized organizational expectations: "The company want healthy employee, because it leads to the greatness of productivity". Regarding mortality, R5 stated, "The deadliest disease in Indonesia... that influenced my perception in my brain", indicating an existential shift. R2 added a social dimension: "There were some friends passed away because of heart disease, that increase awareness". These amplify severity beyond clinical understanding, aligning with Li (2020) observation that perceived severity is the risk factor most widely associated with emotional and behavioral reactions, acting as double-edged sword that drives both emotional problems and precautionary behavior. In collectivistic cultures, social role threats can motivate health action more powerfully than individual health threats, particularly when personal risk perception is low (Smith, 2007). Notably, false reassurance from negative test results can paradoxically reduce perceived severity. R8 admitted, "When the treadmill stress result stated negative by doctor, I felt relieved... and badly, my food habit back to normal, with no limitation". This social-motivation pathway represents a nuance absent from traditional Health Belief Model applications, where more information is assumed to uniformly increase risk perception and individual deliberation drives behavior (Liu, 2022). Knowledge gaps compound compound the problem : 55,3% of oil workers had weak cardiovascular knowledge, and knowledge significantly influences perceived susceptibility, severity, and self efficacy (Yuliawan, 2025). Effective communication of severity must go beyond delivering factual content to create emotional validation and co-constructed meaning (Teal, 2009)

Theme 3: Perceived Benefits Encompassing Psychological and Organizational Legitimacy. Benefits encompass not only clinical improvement, motivating compliance beyond health outcomes alone. Participants valued control routines not only for stabilizing biomarkers but for reducing anxiety and feeling supported. R6 stated, "By regularly control I felt safer too", highlighting the psychological dividend. R12 perceived organizational mandates as care: "I read this as, this is form of a support from company, and facility, we, are the employee, are supported". This extends HBM's benefit construct to include psychosocial and organizational dimensions, consistent with Crisan's (2022) finding that workers value accessibility, but also acceptability, trust, peer understanding, and qualified facilitators. R9 further legitimized KPIs: "I think that is good, company wants employee

healthy so that the productivity still great, so I support (KPI)". However, we caution that psychological benefits like "feeling safe" after negative results can become counterproductive. As R8 noted regarding false reassurance, showing how benefit perception can inadvertently lower vigilance if not managed with proper health literacy. Workers' feeling of being cared by organization, also shown in Hapsari's (2026), which through yearly medical check up, mental health program, sport facility, fostering stronger emotional connection and work engagement.

Theme 4: Informational and Psychological Barriers Outweighing Structural Constraints. In corporate settings with adequate health facilities, informational barriers (symptom ambiguity, false reassurance) are more critical than structural barriers (cost, leave) in hindering preventive action. Contrary to HBM studies that often identify cost/access as primary barriers, our participants with corporate insurance reported minimal structural barriers. R5 confirmed, "No problem, neither from company, nor my boss ", and R6 added, "My boss and my friend at work very supportive, if I need to regular visit doctor, the work can be delegated". Instead, informational barriers dominated. R8 highlighted symptom ambiguity: "The felt of gastric acid / GERD similar with chest pain during the heart attack", leading to delayed action. R6 revealed limited health literacy: "It was when I only thought about brain stroke risk, not until the heart disease risk", ignoring cardiac risks. R9 demonstrated threshold misconceptions: "The real threat, when cholesterol is up above 400, but if it still 200 – 250 still normal". This aligns with Andini and Siregar (2024) quantitative finding that informational barriers explain more variance in compliance than structural ones in insured populations, but adds phenomenological depth on the cognitive mechanisms involved, such as the misinterpretation of "normal" results as "safe."

Theme 5: Embodied and Vicarious Cues as Primary Triggers of Actions. Internal cues (personalized bodily sensations) possess higher perceptual validity than external cues (MCU emails) in triggering sustained health action. While HBM acknowledges both internal and external cues (Janz & Becker, 1984), our data reveal gradient of perceptual validity: Embodied Cues > Social/Vicarious Cues > Passive External Cues. R12 championed embodied knowledge: "My body is my laboratory... have to listen the body". R2 provided a specific somatic marker: "If the muscle pain, ache, usually the level of cholesterol is high". In contrast, passive external cues were often ignored. R1 criticized the lack of follow-up: "But, no further info after I visit, the next step ". Social cues occupied a middle ground; R11 noted, "My dearest friend passed away because severe sickness", which triggered awareness but lacked the immediacy of bodily pain, our phenomenological approach reveals why: embodied cues are trusted because they are personalized, immediate, and cannot be archived like an email.

Theme 6: Holistic Agency as an Ecosystem-Supported Form of Self-Efficacy. By integrating medical adherence, micro-adaptations at work, and ecosystem support (family, colleagues)—not merely individual willpower. Traditional HBM conceptualizes self-efficacy as an individual belief (Smith, 2007). Our findings demonstrate that efficacy is ecosystem-supported. R7 described micro-adaptations: "I tried to move every two hours from my job, that is sit all day long", showing agency within constraints. Spiritual coping was integral for some; R5 stated, "As supporting, it is okay, if you go to Ustadz or Kyai to make Dua", while R12 framed it as sacred duty: "Allah is very loving myself, I am given this body to preserve and maintain". Organizational support enabled action; R6 noted, "The work can be

delegated", removing structural friction. Family support was also crucial; R1 mentioned, "If cooking, one for me is without salt, special menu". These findings collectively indicate that collectivistic cultures require health behavior models incorporating social threat pathways, collective efficacy mechanisms, and organizational care signaling, shifting the locus of motivation from individual risk calculation to socially embedded action (Li, 2025; Liu, 2022; Courtney, 2021). Thus, from enable me to become we to. Group-based community engagement reframed cues to action as relational processes emerging within cohesive, trusting environments rather than individual triggers (Lee, 2026)

These six themes coalesce into a Phenomenological-HBM Conceptual Model (Figure 2), which depicts health behavior not as a static decision but as a transformational journey through three distinct phases: Normalization, Recalibration, and Integration. Phase 1: Normalization (The Starting Point). The journey begins not with medical data, but with a phase of Normalization, where abnormal MCU results are dismissed as "ordinary" due to asymptomatic experiences and the workplace "tahan banting" (resilience) culture. Theme 1 informs this stage, positing that perceived susceptibility is initially low not because of ignorance, but because of active psychological normalization. Theme 4 further explains that in corporate settings with adequate facilities, structural barriers are minimal; instead, informational barriers (symptom ambiguity) and psychological barriers (false reassurance) sustain this normalization. Employees remain in this phase until a disruptive force penetrates their denial.

Phase 2: Recalibration (The Trigger). Recalibration occurs only when Theme 5 is activated: personalized cues penetrate the normalization layer. Our data reveal an ordered continuum of effectiveness impact, where Embodied Cues (e.g., R12's numbness at blood sugar 300) and Vicarious Cues (e.g., R7's colleague death) possess higher perceptual validity than passive external cues (email reminders). Once normalization is shattered, Theme 2 dictates how perceived severity is reconstructed: it increases significantly only when abstract risk is translated into concrete consequences for work performance (R1: "work performance maintained") or sudden mortality awareness (R5: "the deadliest sickness"). This phase represents the critical turning point from "neglect to aware".

Phase 3: Integration (The Outcome). Post-recalibration, employees enter an evaluation phase weighing Theme 3 (Perceived Benefits) against remaining barriers. Benefits are redefined beyond clinical outcomes to include psychological peace of mind (R6: "felt safer when doing regular control") and organizational legitimacy (R12: "we are, the employee, is supported by company"). Finally, action is sustained not by individual willpower alone but through Theme 6 : Holistic Agency. This involves integrating medical adherence, microadaptations at work (R7: "moving every 2 hour work with sitting"), spiritual coping (R5: "to ustadz, kyai, Dua"), and ecosystem support (to be healthy with wife too, R3). Crucially, the Organizational Context moderates every stage: supportive policies (flexible control leave, personalized education) can facilitate recalibration and agency, while passive communication (generic emails) can reinforce normalization.

This model synthesizes six phenomenological themes integrated with the Health Belief Model. Phase 1 (Normalization) is sustained by informational barriers and low susceptibility. Phase 2 (Recalibration by Crisis and Awakening) is triggered by level of cues and amplified by work/mortality severity. Phase 3 (Integration) is sustained by Holistic Agency and organizational legitimacy. Organizational context moderates all stages. This

aligned the finding on few studies that organizational culture enhance positivity among all six dimension of HBM, it strengthens perceived susceptibility, severity, self-efficacy (Chen, 2026). The strongest implication is to redesign workplace interventions around health literacy, self-efficacy, stigma reduction, and organizational meaning-making, not access alone (Su, 2025). And wider, we agree with recent study that countries should invest in existing cost-effective public health programs and clinical interventions to target modifiable risks, promote healthy aging across the lifespan, and reduce disability and premature death due to cardiovascular disease (Roth, 2020).

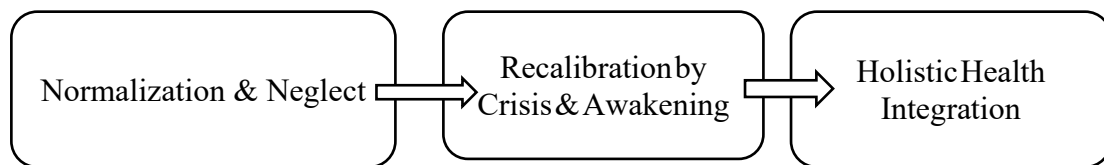


Figure 2. Transformational Model of Health Risk Perception in High-Risk Employees

Theoretical Contributions, first, this demonstrate that HBM constructs are dynamic processes, not static variables, in workplace contexts, addressing Carpenter's (2010) call for more contextualized HBM measurement. Second, this study propose a distinct gradual of cue effectiveness that prioritizes embodied and vicarious cues over passive information, enriching the "cues to action" construct. Third, this study expand self-efficacy to "Holistic Agency," showing how collectivistic cultures and organizational support co-constitute preventive behavior. Practical Implications, for Employee Wellness Programs, our findings suggest a fundamental shift from compliance-based initiatives toward meaning-based health interventions. Rather than relying primarily on mass communication and routine monitoring, organizations should emphasize personalized health consultations that help employees interpret cardiovascular risk within the context of their own lived experiences. Health promotion activities should also strengthen bodily health literacy by improving employees' ability to recognize early symptoms and understand the significance of abnormal medical findings, thereby reducing symptom ambiguity and false reassurance. In addition, workplace environments should incorporate small but meaningful "micro-adaptations," such as movement reminders, hydration stations, and supportive work routines that facilitate healthy behaviors during daily activities. Because health decisions are often influenced by close social relationships, involving family members through joint health education and wellness workshops may further reinforce employees' motivation to engage in preventive care. Finally, organizations should communicate health initiatives as expressions of genuine organizational care rather than administrative obligations, thereby strengthening organizational legitimacy and employee trust. Consistent with these principles, the effectiveness of workplace health programs should be evaluated not only by attendance at follow-up examinations but also by improvements in employees' understanding of cardiovascular risk and their sustained engagement in preventive health behaviors.

Conclusion

This study concludes that employees' preventive health behavior in managing cardiovascular risk is shaped not only by clinical information and individual awareness but also by their lived experiences, workplace relationships, and sociocultural context. Engagement in routine health control is therefore a dynamic process of interpreting and responding to health risks rather than merely complying with medical recommendations. These findings highlight the importance of workplace health promotion initiatives that go beyond providing accessible health services by fostering meaningful employee engagement, strengthening health awareness, and integrating culturally responsive approaches into organizational wellness programs. Such initiatives should consider employees' everyday experiences and organizational realities to encourage sustained preventive health behavior.

This study has limitations that should be considered when interpreting its findings. The research was conducted in a single Indonesian cement company with predominantly male, mid-career employees, which may limit the transferability of the findings to other industries and cultural settings. Its cross-sectional design and reliance on self-reported experiences also present limitations, although triangulation with objective health records helped strengthen the findings. Future research could examine the applicability of the identified themes across larger and more diverse organizational settings, employ longitudinal designs to explore changes in employees' health perceptions over time, and conduct comparative studies across industries and cultural contexts. Furthermore, mixed-methods intervention studies could assess how workplace wellness programs incorporating employees' lived experiences and perceptions of health risks contribute to sustained preventive health behavior.

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