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The Emotional Dimensions of Prediabetes Prevention Video Communication in Malaysia

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ABSTRACT

Diabetes prevalence in Malaysia has increased dramatically from 11.2% (2011) to 18.3% (2019), with prediabetes representing a critical intervention opportunity. This study examines emotional responses to prediabetes prevention videos using the Extended Parallel Processing Model (EPPM) framework, complemented by the Evaluation Grid Method of Laddering (EGML) and Lokman's Emotion and Importance Quadrant (LEIQ™) adaptation. Fifteen health-related videos were initially selected and validated by medical, psychology, and cinematography experts, resulting in 10 final specimens. Focus group discussions with 18 participants at risk for prediabetes analysed emotional responses and video design elements. EPPM sessions with three additional focus groups mapped emotional reactions onto efficacy-threat quadrants. Results revealed distinct positive emotions (hope, motivation, empathy) and negative emotions (fear, confusion, boredom) linked to specific video elements. Personal narratives, clear language, and actionable information generated positive responses, while technical language and poor production values evoked negative reactions. EPPM analysis identified four audience segments requiring different communication strategies: provide calls to action (high efficacy × high threat), educate about solutions (low efficacy × high threat), educate about risk (high efficacy × low threat), and comprehensive education (low efficacy × low threat). This emotion-centred, audience-segmented approach provides practical guidance for developing targeted prediabetes prevention communications in Malaysia.

Keywords: *Health communication, EPPM, prediabetes, emotional response, EGML.*

INTRODUCTION

Diabetes represents a critical global health challenge, with Malaysia facing particularly severe impacts as the country with the highest diabetes rate in the Western Pacific region. Prevalence increased dramatically from 11.2% in 2011 to 18.3% in 2019, costing over USD600 million annually (Ganasegeran et al., 2020; Akhtar et al., 2022). The Institute for Public Health projects diabetes will affect 7 million Malaysian adults by 2025, representing 31.3% prevalence (Ministry of Health Malaysia, 2020).

Recent studies reveal global lack of public awareness about diabetes (Abdul Latif et al., 2018). This deficit stems from generic health communication strategies that ignore unique psychological needs of at-risk populations and fail to facilitate behavioural change. Generic strategies employ "one-size-fits-all" approaches ignoring diverse psychological profiles, cultural contexts, and motivational factors influencing health decision-making (Henkel et al., 2020). Research demonstrates individuals process health information differently based on risk perceptions, self-efficacy beliefs, cultural backgrounds, and emotional states (Johnson & Martinez, 2022).

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Despite growing evidence that emotions significantly influence health decision-making, most theoretical frameworks emphasize cognitive variables while overlooking affective states (Chen et al., 2023). Emotional processing occurs faster than cognitive evaluation and often determines initial behavioural responses to health threats (Abd Rahman et al., 2023). In diabetes prevention, emotional reactions predict behavioural intentions more strongly than cognitive factors alone (Chu et al., 2023). However, significant gaps remain in understanding how emotional responses to video-based communications influence prediabetes prevention behaviours, particularly in Malaysian cultural contexts where family dynamics, religious beliefs, and traditional practices intersect with modern medical approaches (Ahmad & Tan, 2021).

This study employs the Extended Parallel Processing Model (EPPM) to analyse how individuals at risk for diabetes respond emotionally to prediabetes prevention videos. The research seeks to understand relationships between emotional responses and video design elements, laying groundwork for developing effective communication strategies that influence behaviour change among at-risk individuals in Malaysia.

LITERATURE REVIEW

Diabetes and Prediabetes Communication Campaigns

Diabetes is a complex disease requiring those affected to make multiple daily decisions regarding food, physical activity, and medications, while also becoming adept at various self-management skills (Shrivastava et al., 2013). For people to acquire the necessary self-management skills, diabetes education is critical, with ongoing support to maintain progress made during education (Walker, 1999). With seven million Malaysian adults likely to develop diabetes by 2025, the current Malaysian healthcare system will struggle to afford diabetes care costs unless incidence rates and related complications are reduced. Diabetes education has proven cost-effective by decreasing hospital admissions and readmissions, as well as reducing lifetime healthcare costs through lower complication risks.

The Malaysian Diabetes Educators Society developed The Malaysian Diabetes Education Manual in 2020 to provide healthcare professionals with practical resources for diabetes education. While the manual primarily supports direct education from healthcare professionals, the government also implements diabetes campaigns using leaflets, posters, and media to increase public awareness. Henceforth, this study aims to develop a video communication guideline for prediabetes prevention that could complement The Malaysian Diabetes Education Manual and enhance diabetes awareness through more emotionally engaging video campaigns.

Video Communication in Health for Behaviour Change

Video communication has gained increased attention across multiple fields in recent years, including education, science, risk, and health communication. Video allows rapid communication, can incorporate empathy, and has good outreach potential. The COVID-19 pandemic accelerated the adoption of video communication, with most population-directed communications delivered through this medium. For example, the effectiveness of educational video delivery has been widely studied even before 2019 (Canto, 2017; Seckman, 2018), but the pandemic magnified research efforts in this area (Moreno-Guerrero et al., 2020; Fassbender, 2020; Chen & Thomas, 2020).

According to Lungu et al. (2021), emotions received only moderate attention in previous studies, with just 12% of identified outcomes belonging to the emotion's category. The limited research on emotional outcomes highlights a gap in understanding how emotional factors affect communication outcomes. While some evidence exists regarding emotional reactions and trust, little is reported about how emotions affect the acceptance of health messages or influence decision-making processes. This underscores the importance of investigating the relationship between emotional responses and video design elements that could influence behavioural decisions related to prediabetes prevention.

Emotional Mechanisms in Health Communication

Contemporary research in health communication increasingly recognizes emotions as primary drivers of health behaviour change, operating through multiple psychological mechanisms (Shiota et al., 2023). The dual-process theory of cognition explains that emotional responses often occur automatically and influence subsequent rational processing of health information (Henkel et al., 2020). Positive emotions such as hope and empowerment enhance message acceptance and self-efficacy beliefs, while negative emotions like fear can motivate protective behaviours when accompanied by clear, actionable guidance (White et al. 2021).

In diabetes prevention specifically, studies show that emotional framing significantly impacts medication adherence, dietary changes, and exercise behaviours (Abd Rahman et al., 2021). Fear-based approaches can motivate initial behaviour change but often lead to avoidance and denial if not balanced with efficacy-building content (Kämpf et al., 2023). Conversely, hope-based messaging combined with practical guidance demonstrates superior long-term behaviour maintenance (Singh et al., 2023). This emotional complexity necessitates sophisticated theoretical frameworks that can account for both emotional and cognitive processing in health decision-making.

The Evaluation Grid Method of Laddering (EGML)

The Evaluation Grid Method of Laddering (EGML) elicits constructs that define facets within an individual's mental model, considering each construct to determine its importance within that mental model (Crudge & Johnson, 2006; Kadir et al., 2018). A plausible mental model's construction represents user expectations that govern action effects and guide how systems are applied and feedback interpreted. According to Kadir et al. (2018), the mental model approach to understanding human interactive behaviour shows promise for informing effective interface design.

This study selected EGML for determining users' mental models because the repertory grid laddering technique can be hierarchically organized and interrelated by cause and effect of the construct systems or objects, with constructs being central to user beliefs. These core concepts can be visualized as forming the topmost points of a pyramid, with lower positions filled by interrelated systems or object constructions (Kadir et al., 2018).

According to Tan and Tung (2003), this technique allows participants to express evaluative views and enables researchers to probe deeper into responses for richer information, helping researchers better understand participants' perceptions. The data obtained from this technique is sufficiently rich to support comprehensive analysis of participants' construct systems (Dillon & McKnight, 1990; Mcknight, 2000; Hunter & Beck, 2000; Hassenzahl & Wessler, 2000; Dick & Jankowicz, 2001).

The Extended Parallel Processing Model (EPPM)

The Extended Parallel Processing Model (EPPM), developed by Witte (1992), explains how rational considerations (response efficacy and self-efficacy) and emotional reactions (perceived severity and perceived susceptibility) combine to determine individuals' behavioural decisions in response to fear-arousing health messages (Health Communication Capacity Collaborative, 2021). While many theories and models can be applied in social-behavioural communication approaches, the EPPM has been widely acknowledged as particularly valuable for understanding how emotions, especially fear, influence health behaviours (Anon, 2020; Witte & Allen, 2000).

The model describes how the elicitation of fear motivates individuals to reduce unpleasant feelings by taking protective actions (Popova, 2012). According to this framework, when individuals are confronted with a threat message, they evaluate both the threat itself and their efficacy in dealing with it. The threat appraisal includes assessments of susceptibility (likelihood of being affected) and severity (seriousness of the threat). The efficacy component comprises response efficacy (belief that the recommended response will avert the threat) and self-efficacy (belief in one's ability to perform the recommended response).

Based on these evaluations, the EPPM identifies four audience segments defined by efficacy and threat perceptions, each suggesting a specific strategy for health communication:

- High Efficacy × Low Threat = Educate about risk strategy
- Low Efficacy × Low Threat = Educate about risk and solutions strategy
- High Efficacy × High Threat = Provide calls to action strategy
- Low Efficacy × High Threat = Educate about solutions strategy

These quadrants represent distinct psychological states that determine how individuals process and respond to health messages. In the "Danger Control" process (High Efficacy × High Threat), individuals focus on strategies to reduce the threat through protective behaviors. In contrast, the "Fear Control" process (Low Efficacy × High Threat) occurs when individuals focus primarily on managing their fear rather than addressing the actual threat, often through denial or avoidance. The remaining quadrants represent states of insufficient motivation (Low Threat) that require different educational approaches to generate appropriate responses (Popova, 2012; Witte, 1994).

For this study, the researchers adapted Lokman's Emotion and Importance Quadrant (LEIQ™) framework (Kadir et al., 2021; Lokman et al., 2019) to integrate with the EPPM, allowing for a more comprehensive analysis of emotional responses to prediabetes prevention messages. This adaptation enables the mapping of diverse emotional reactions onto the EPPM's quadrants to identify personalized message design parameters that could influence behavioural change in the Malaysian context.

METHODOLOGY

Research Design

This study employs a dual-method approach combining expert content analysis and focus group discussions. Expert analysis ensures videos meet professional standards for medical accuracy, psychological impact, and production quality. Focus groups capture subjective emotional responses from target populations, revealing how at-risk individuals interpret validated content. This triangulation strengthens validity by combining professional expertise with authentic user experiences.

Video Selection Criteria and Popularity Metrics

Initial video selection employed systematic popularity metrics based on established digital engagement indicators. Videos were considered popular if they met at least two of the following criteria: (1) view count exceeding 10,000 within six months of publication, (2) engagement rate (likes + comments/views) above 2%, (3) positive like-to-dislike ratio (>70% positive), and (4) sharing frequency above platform average for health content. These thresholds were established based on health communication research indicating that videos meeting these metrics demonstrate sufficient audience reach and engagement to influence health behaviours (Digital Health Analytics, 2021).

Expert Selection and Validation Process

Three experts were purposively selected based on specific inclusion criteria: (1) Medical expert: Board-certified endocrinologist with minimum 10 years clinical experience in diabetes care and published research in diabetes education; (2) Psychology expert: Licensed clinical psychologist specializing in health behaviour change with expertise in diabetes psychology; (3) Cinematography expert: Professional video producer with minimum 5 years' experience in video production.

The exclusion criteria included conflicts of interest with video content creators, lack of relevant professional certification, or insufficient experience in their respective domains. These experts were chosen because video-based health communication requires multi-disciplinary validation to ensure content meets clinical accuracy standards, psychological impact requirements, and professional production quality that influences audience engagement and credibility. These experts validated 10 final videos ensuring clinical accuracy, psychological impact, and production quality.

Focus Group Discussion 1: Evaluation Grid Method of Laddering (EGML)

The EGML focus group discussion was designed to: (i) organize video specimens from most to least important; (ii) identify emotions involved when participants watch the videos; and (iii) classify items and categories of video specimens. The EGML elicits constructs defining facets within the mental model of individuals, considering each construct to determine its importance within the user's mental model.

Participants

The study involved 18 participants who watched and reviewed the video specimens and evaluated their watching experience. Lokman et al. (2009) emphasize the importance of aligning participant profiles with the target population in affective evaluation studies to ensure ecological validity, particularly when analysing emotional responses. Hence, the study participants were recruited among individuals at risk for diabetes/prediabetes, meeting one or more of the following criteria:

i. Overweight
ii. Family history of type 2 diabetes
iii. Physically active less than 3 times a week
iv. History of gestational diabetes or having given birth to a baby weighing over 4 kilograms
v. Women with polycystic ovary syndrome

The above inclusion criteria align with established clinical guidelines, ensuring that the study cohort reflects the target population most vulnerable to diabetes development. The inclusion criteria for at-risk individuals were derived from the American Diabetes Association's 2023 Standards of Medical Care and the Malaysian Clinical Practice Guidelines for Type 2 Diabetes Mellitus (2022). These evidence-based criteria identify individuals with significantly elevated risk for diabetes development within 5-10 years.

Also, all participants were between 18-45 years old, familiar with video-watching, and participated voluntarily. The 18-45 years age range was selected based on epidemiological evidence showing this demographic represents the critical intervention window for prediabetes prevention. Research indicates that prediabetes development peaks in the 35-45 age group, while intervention effectiveness remains highest among younger adults who have greater behavioural plasticity (National Diabetes Prevention Program, 2021). Participants under 18 were excluded due to different risk profiles and consent requirements, while those over 45 often have established diabetes requiring different communication approaches focused on management rather than prevention.

EGML Session

EGML sessions involved four steps: (1) watching videos, (2) ranking importance for prevention behaviour, (3) laddering upwards to identify emotions, and (4) laddering downwards to classify design elements. Sessions used color-coded sticky notes (blue for positive emotions, pink for negative, green for features, yellow for categories). The session was conducted in two parts – first focusing on Positive Affect State and then on Negative Affect State, with a 30-to-60-minute break between sessions to prevent participant fatigue. Each evaluation session lasted approximately 1 to 2 hours.

Extended Parallel Processing Model (EPPM) Session

In addition to the EGML session, this study conducted EPPM sessions to understand how rational considerations (efficacy beliefs) and emotional reactions (fear of health threats) combine to determine behavioural decisions related to prediabetes. This approach was adapted from Lokman's Emotion and Importance Quadrant (LEIQ^{TM}) framework to identify the importance of personalized message design parameters that could influence behavioural change. The LEIQ™ framework was selected for integration with EPPM because it provides a systematic method for mapping emotional responses onto importance dimensions, which aligns with EPPM's efficacy-threat quadrants.

Three focus groups of six participants each conducted EPPM sessions involving: (1) brainwriting individual thoughts about prediabetes prevention, (2) group consolidation to compare opinions and find agreements, and (3) mapping emotional reactions onto EPPM quadrants to identify personalized message design parameters influencing behavioural decisions. This session helped identify message design strategies that could determine emotional reactions and behavioural decisions regarding prediabetes prevention (15-20 minutes).

DATA ANALYSIS

Expert Video Validation Process

The expert validation process confirmed the selection of 10 videos from the initial 15 specimens. Three experts from medical, psychology, and cinematography backgrounds evaluated videos for clinical accuracy, psychological impact, and production quality. This

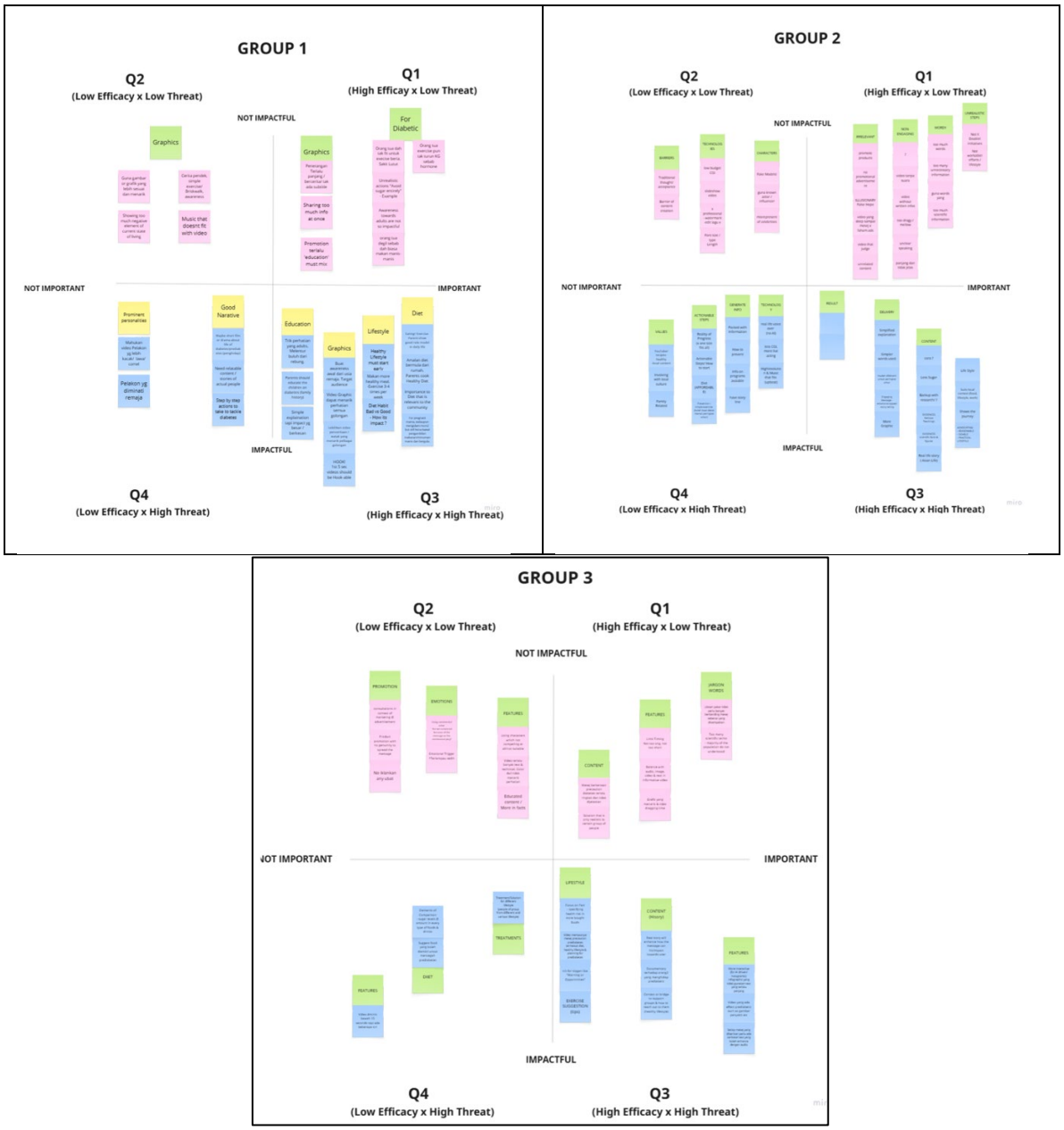
validation ensured that subsequent emotional response analysis was conducted using professionally vetted content suitable for prediabetes prevention communication.

All three experts validated the selected videos from their respective professional perspectives. For example, the medical expert assessed clinical accuracy and evidence-based content, confirming that videos like "Prediabetic Care Program" and "Prediabetes: A Chance to Prevent Type 2 Diabetes" provided accurate medical information about disease pathophysiology, risk factors, and management strategies. The psychology expert evaluated psychological impact and behaviour change elements, highlighting how videos such as "Diabetes and Emotional Wellbeing: Zena's Story" effectively employed principles of motivation, self-efficacy, narrative engagement, and appropriate risk communication. The cinematography expert analysed visual communication aspects, noting how different videos skilfully utilized techniques like professional lighting, thoughtful composition, effective pacing, and appropriate visual metaphors to enhance message delivery.

The collective expert analysis ensured a comprehensive evaluation that considered multiple dimensions of health communication effectiveness. This rigorous selection process was critical for avoiding bias and ensuring that the final 10 video specimens would provide accurate, psychologically impactful, and visually engaging educational content about prediabetes prevention. Importantly, the experts identified videos that addressed often-neglected aspects of diabetes care, such as emotional wellbeing and foot care, while also recognizing the value of diverse presentation formats (animation, documentary, instructional) in accommodating different learning preferences and attention capacities.

Integration of Rational Considerations and Emotional Reactions in Behavioural Decision-Making: EPPM Quadrant Analysis

The Extended Parallel Processing Model (EPPM) sessions conducted with three focus groups, each consisting of six participants at risk for prediabetes, revealed distinct patterns of how rational considerations and emotional reactions combined to influence behavioural decisions regarding prediabetes prevention. Through brainwriting exercises and group consolidation activities, participants identified message parameters that influenced their behavioural decisions, which were then systematically mapped onto the EPPM framework's four quadrants based on their efficacy beliefs and threat perceptions. The illustration in Figure 1 shows the responses from three focus group discussion.



Q: Quadrant

Figure 1: Participants' responses based on EPPM framework

High Efficacy × High Threat (Quadrant 3): Danger Control Response – "Provide Calls to Action Strategy"

Analysis of Group 1 responses in this quadrant demonstrated that participants prioritized educational content emphasizing family involvement and early adoption of healthy lifestyle practices. Participants expressed strong confidence in their ability to implement prevention strategies while maintaining appropriate concern about diabetes risks. The rational considerations in this quadrant centred on educational approaches targeting adult populations with family history context, graphics with clear target audience identification, and lifestyle interventions emphasizing early adoption of healthy habits. Emotional reactions were characterized by motivated concern rather than overwhelming fear, with participants describing feelings of "hopeful determination" and "empowered awareness". The diet category was particularly prominent in this quadrant, highlighting meal planning, home

cooking, and community-based nutritional guidance as key behavioural intentions. Under the EPPM framework, this quadrant represents the provide calls to action strategy, which encourages people to take protective action to avoid or reduce the threat. Participants in this category demonstrated the strongest behavioural intentions, with clear commitments to immediate lifestyle modifications and prevention strategies.

As for Group 2's analysis in this quadrant emphasized the importance of clarity and accessibility in messaging about insulin and diabetes management. Their responses prioritized result-oriented content delivered through simplified explanations with straightforward wording, content featuring realistic lifestyle modifications particularly around sugar reduction, and authentic experiences from individuals living with diabetes. Participants in this group demonstrated high efficacy beliefs combined with appropriate threat recognition, leading to immediate action planning and commitment to behaviour change. The emotional tone remained optimistic yet serious, with participants expressing confidence in their ability to prevent diabetes progression while acknowledging the importance of taking action.

Moreover, Group 3's responses in this quadrant revealed a strong preference for authentic content with practical application. Their most effective content emphasized historical context through real patient stories, practical lifestyle advice with community support mechanisms, specific exercise guidance, and differentiated treatment approaches. Participants demonstrated strong self-efficacy beliefs and response efficacy expectations while maintaining realistic threat perceptions. The combination of confidence in prevention abilities with appropriate concern about diabetes consequences resulted in concrete behavioural commitments and specific action plans.

Low Efficacy × High Threat (Quadrant 4): Fear Control Response - "Educate About Solutions Strategy"

Content deemed impactful but requiring support appeared in this quadrant across all groups, centre around narrative elements including relatable personal stories and step-by-step action plans for managing diabetes. Participants in this category acknowledged the seriousness of diabetes threats but expressed doubt about their personal capabilities to implement effective prevention strategies. The rational considerations focused on the recognition that diabetes posed significant health risks, but participants questioned whether recommended prevention methods would be effective for their specific situations or whether they possessed the necessary skills and resources to implement lifestyle changes successfully.

Emotional reactions in this quadrant were characterized by anxiety, overwhelm, and feelings of helplessness when confronted with diabetes prevention information. Participants described feeling "scared but unsure how to respond effectively" and "worried about my ability to make such big changes". Group 2 specifically identified values-based messaging acknowledging individual differences in disease progression and actionable starting points for behavioural change as important elements for this quadrant, alongside technological considerations such as human narration versus AI and high-resolution visual content. The fear control response dominated behavioural decisions, with participants focusing on managing their emotional distress rather than addressing the actual health threat. This quadrant represents the educate about solutions strategy under EPPM, requiring content that builds confidence and provides clear, achievable steps for prevention while addressing emotional concerns and barriers to action.

Short-form video content and dietary comparisons between food types appeared in Group 3's responses for this quadrant, alongside success stories demonstrating positive outcomes. However, participants noted that these elements needed to be accompanied by strong efficacy-building components to prevent fear control responses and facilitate actual behaviour change. The combination of high threat perception with low efficacy beliefs created psychological tension that required careful message design to avoid defensive avoidance and promote constructive action.

High Efficacy × Low Threat (Quadrant 1): No Response – "Educate About Risk Strategy"
Several ineffective approaches were identified across all groups in this quadrant, including unrealistic exercise expectations, inadequately targeted graphics, information overload, and educational content with overtly promotional elements. Participants demonstrated confidence in their ability to implement prevention strategies but minimized the personal relevance or urgency of diabetes risks. Rational considerations in this quadrant reflected strong beliefs in prevention effectiveness and personal capabilities, but participants failed to perceive diabetes as an immediate or serious personal threat.

Emotional reactions were characterized by complacency, overconfidence, and dismissal of diabetes risks. Participants expressed feelings of being "too young to worry about diabetes" or "healthy enough that diabetes won't affect me". Group 2 highlighted irrelevant promotional content, excessive scientific information without adequate context, and unclear presentation styles as problematic elements that reinforced complacent attitudes. The lack of threat perception combined with high efficacy beliefs resulted in procrastination and delayed action, with participants preferring to address diabetes prevention "when it becomes more relevant" or "if problems actually develop".

For Group 3, they identified ineffective approaches including excessive technical terminology, poorly framed content, and solutions targeting overly specific population segments that failed to create personal relevance or urgency. This quadrant represents a situation where people know what to do but are not motivated to take action due to insufficient threat perception, requiring the educate about risk strategy to increase awareness of personal vulnerability and the serious consequences of inaction.

Low Efficacy × Low Threat (Quadrant 2): No Response – "Educate About Risk and Solutions Strategy"
The least effective quadrant contained problematic content features identified by all groups, such as contextually inappropriate graphics, mismatched multimedia elements, negative framing of current health status, and emotionally disconnected awareness messaging. Participants in this quadrant demonstrated limited understanding of both diabetes prevention methods and personal risk factors, combined with minimal emotional engagement with diabetes prevention content.

Moreover, Group 2 highlighted technological limitations like low-budget production elements, celebrity endorsements lacking authenticity, and marketing materials without clear health messaging as characteristic of this quadrant. Rational considerations reflected low knowledge about diabetes prevention effectiveness and limited confidence in personal ability to implement lifestyle changes. Participants expressed uncertainty about "what diabetes actually means for me" and "whether anything I do would actually make a difference".

Emotional reactions in this quadrant were characterized by indifference, disconnection, and lack of engagement with diabetes prevention messaging. Group 3 emphasized emotionally inauthentic content featuring commercial actors rather than actual patients, character-focused rather than content-focused presentations, educational content with disguised marketing objectives, and overly technical presentations emphasizing facts without emotional connection. The combination of low efficacy beliefs and low threat perception resulted in no behavioural response, with participants showing no motivation to seek additional information or change current behaviours. This quadrant represents the most challenging communication scenario, requiring comprehensive education about both risks and solutions to generate any behavioural engagement.

Rational-Emotional Integration Patterns Across All Groups

Analysis of responses across all three focus groups revealed four distinct patterns of how rational evaluations and emotional reactions integrated to influence behavioural decisions regarding prediabetes prevention. The integration process demonstrated complex interactions between cognitive assessments of efficacy and threat with affective responses to video content, creating dynamic psychological states that determined ultimate behavioural intentions.

The first pattern, observed most frequently in the High Efficacy × High Threat quadrant, involved synergistic enhancement where rational confidence in prevention abilities combined with appropriate emotional arousal to produce the strongest behavioural intentions. Participants experiencing this pattern demonstrated clear action planning, specific behavioural commitments, and immediate implementation intentions. The emotional responses amplified the effects of rational efficacy beliefs, creating a reinforcing cycle where confidence generated positive emotions, which in turn strengthened commitment to behaviour change.

The second pattern involved emotional amplification of rational evaluations, where the emotional tone of video content significantly influenced how participants processed efficacy and threat information. Positive emotions such as hope, motivation, and inspiration enhanced participants' assessments of their prevention capabilities and the effectiveness of recommended strategies. Conversely, negative emotions like fear, anxiety, and overwhelm could either motivate protective action when efficacy beliefs were strong or lead to defensive avoidance when participants doubted their capabilities. This pattern highlighted the critical importance of emotional tone in health communication, as the same rational information could produce dramatically different behavioural outcomes depending on the emotional context.

The third pattern demonstrated instances where strong rational evaluations overcame contradictory emotional reactions, particularly evident when participants with high efficacy beliefs proceeded with behavioural intentions despite initial fear or anxiety about diabetes consequences. This rational override pattern suggested that well-developed efficacy beliefs could serve as protective factors against potentially paralyzing emotional responses, enabling continued engagement with prevention messaging even when content evoked negative emotions.

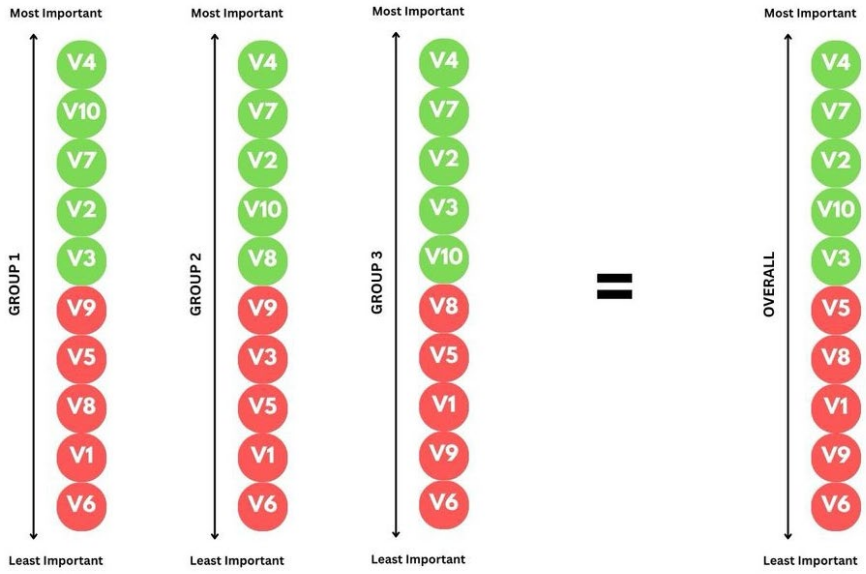
Moreover, the fourth pattern showed emotional dominance over rational processing, most commonly observed in the Fear Control quadrant where overwhelming negative emotions prevented effective processing of efficacy information. When emotional reactions

were particularly intense, they could override rational considerations entirely, leading to defensive avoidance regardless of the actual prevention information provided. This pattern underscored the potential for strong negative emotions to derail otherwise effective health communication, emphasizing the need for careful emotional calibration in diabetes prevention messaging.

Emotional Responses to Prediabetes Prevention Videos

a) Video Importance Ranking and Associated Emotional Patterns

The Evaluation Grid Method of Laddering (EGML) sessions conducted with 18 participants at risk for prediabetes revealed systematic patterns in how emotional responses influenced perceived video importance for prevention purposes. Participants consistently ranked videos from most to least important based on their potential to influence prediabetes prevention behaviors, with clear correlations emerging between emotional engagement levels and importance ratings across all three focus groups.



V: Video; Green: Most important; Red: Least important.

Figure 2: Video importance ranking from participants

As illustrated in Figure 2, the most important videos, including V4 (*Prediabetes: A Chance to Prevent Type 2 Diabetes*), V7 (*Diabetes and Emotional Wellbeing: Zena's Story*), V2 (*Pre-diabetes is reversible when you take the right steps*), V10 (*Prediabetes Awareness: Kisah Caca dan Papa*), and V3 (*What Is a Diabetes Care and Education Specialist?*), consistently appeared in the top positions across all groups and generated predominantly positive emotional responses. For instance, V4 emerged as the most universally important video, evoking emotions of hope, encouragement, motivation, empathy, and gratitude among participants. The consistent high ranking of this video across all groups suggested that participants found educational content with a preventive focus and clear narrative structure particularly valuable for understanding and engaging with prediabetes prevention. Participants described feeling "hopeful about prevention possibilities" and "motivated to take action" when viewing this content, indicating that the combination of factual information with optimistic framing created strong emotional engagement and behavioral intention.

For V7, it consistently ranked highly across groups, indicating the importance of emotional aspects and personal narratives in health communication. This video generated strong empathetic responses, with participants expressing feelings of sympathy, emotional connection, and inspiration when viewing Zena's personal story about diabetes and emotional wellbeing. The narrative approach created emotional bridges between viewers and content, enabling participants to see diabetes as affecting real people with relatable experiences rather than as an abstract medical condition. Participants noted feeling "emotionally connected to the person in the video" and "inspired by seeing someone manage diabetes successfully", demonstrating how personal narratives can transform clinical information into emotionally meaningful content that motivates behaviour change.

The least important videos, consistently identified as V9, V5, V8, V1, and V6, evoked predominantly negative emotional responses that created barriers to effective health communication. For example, V5 (*Infosihat KKM: Cara penjagaan kaki*) generated emotions of confusion, feeling lost, finding content very general, and lacking engagement among participants. The negative responses to this video highlighted how overly technical or poorly presented content could create emotional disconnection and reduce motivation to engage with diabetes prevention information. As for V8, it was characterized by participants as boring, too fast-paced, difficult to absorb, and confusing, emphasizing how inappropriate pacing and information density could overwhelm viewers and prevent effective message processing. Meanwhile, V1 evoked responses of being unattractive, boring, and sleep-inducing, while V9 generated feelings of boredom, confusion, and emptiness, and V6 was criticized for grammar issues, being too short or brief, and appearing untrustworthy.

Emotional Response Categorization and Systematic Analysis

Through systematic analysis using the EGML laddering technique, participants' emotional responses were captured using color-coded sticky notes, with blue representing positive emotions, pink indicating negative emotions, green for identifying video items and features, and yellow for categorizing content elements. The initial collection of Positive Affective Negative Affective Scale (PANAS) emotional descriptors was refined through careful analysis into 53 standardized emotional responses that effectively captured the range of participants' affective reactions to prediabetes prevention videos.

The standardization process revealed important patterns in emotional responses, with positive emotions consistently associated with videos that participants ranked as most important for prediabetes prevention. Emotions such as "inspired", "motivated", and "empathetic" were strongly linked to videos that combined factual information with emotional engagement, personal narratives, and clear guidance for action. These positive emotional responses appeared to enhance participants' receptivity to prevention messages and strengthen their intentions to engage in preventive behaviours. The analysis showed that effective prediabetes prevention videos needed to address multiple emotional domains simultaneously, generating not only cognitive understanding but also emotional motivation for behaviour change. Therefore, Table 4 shows the positive emotional responses to most important videos.

Table 4: Positive emotional responses

Video	Positive Emotions
V4	Hopeful, Encouraged, Motivated, Empathetic, Grateful
V7	Empathy, Sympathy, Emotionally Connected, Inspired
V2	Fascinated, Motivated, Action-oriented
V10	Related, Understanding, Emotional
V3	Calm, Good, Encouraging

Negative emotions such as “boring”, “confused”, and “frustrated” were consistently associated with videos ranked as least important, revealing specific barriers to effective health communication. These negative emotional responses appeared to interfere with message processing and reduce participants' willingness to engage with diabetes prevention information. The categorization process identified four distinct types of emotional responses: primary emotions representing direct affective reactions, complex emotions reflecting blended emotional states, cognitive-emotional states showing integration of thinking and feeling, and engagement indicators marking behavioural intention levels.

Primary emotions included direct affective responses such as happiness, hope, fear, and sadness that represented immediate emotional reactions to video content. Complex emotions encompassed more sophisticated affective states like empathy, motivation, overwhelm, and scepticism that reflected participants' deeper engagement with video messages. Cognitive-emotional states captured the integration of intellectual understanding with emotional response, including feelings of enlightenment, preparedness, confusion, and helplessness. Engagement indicators represented emotional markers of behavioural intention, including action-oriented feelings, readiness to change, disengagement, and avoidance responses. Henceforth, Table 5 shows the negative emotional responses to the least important videos.

Table 5: Negative emotional responses

Video	Negative Emotions
V5	Confused, Lost, Very General, Not Engaging
V8	Boring, Too Fast, Cannot Absorb, Confusing
V1	Not Attractive, Boring, Sleepy
V9	Boring, Confused, Empty Feeling
V6	Grammar Issues, Short/Brief, Untrustworthy

b) Video Design Elements and Their Emotional Triggers

The analysis of video design elements revealed systematic relationships between specific production features and the emotional responses they generated among participants. Videos that consistently generated positive emotions and high importance rankings shared several key characteristics that distinguished them from less effective content.

Table 6: Items and categories of most important videos

Video	Items	Categories
V4	Storyline	Moral Support
		Curable mindset
	Acting	Realistic
		Local context
	Documentary	Feel alive
		Real life

V7	Storyline	Emotional trigger
	Language	Clear
		Easy to understand
	Actor	Show of positive lifestyle
		Positive actor (woman)
V2	Video and Sound	Very clear
		Trigger awareness
	Video image	Good testimonial
	Statistic and fact	Focus on facts
	Information	Very concise
		Doesn't feel difficult
	Text / Subtitle	Easy to understand
V10	Voice tone	Sentimental
		Lesson from father
		Caring
	Music	Touching music
	Message delivery	Clear and concise
		Provoking
V3	Educational	Good not scary for resolution
	Facts	Very factual
		Compelling
	Animation	Good animation
		Factual

As illustrated in Table 6, most important videos demonstrated clear storylines with emotional triggers that helped participants connect personally with diabetes prevention messages, realistic acting that enhanced credibility and relatability, high-quality production values that conveyed professionalism and trustworthiness, and accessible content delivery that made complex medical information understandable to lay audiences.

For instance, V4's success in generating positive emotions was attributed to its storyline that provided "moral support" and promoted a "curable mindset", acting that participants found realistic and representative of local contexts, and documentary-style presentation that made participants "feel alive" and connected to "real life" experiences. The combination of these elements created emotional resonance that enhanced message effectiveness and promoted behavioural intention. Moreover, V7's high emotional impact resulted from its storyline serving as an "emotional trigger" with clear and easy-to-understand language, and its positive female actor who demonstrated healthy lifestyle choices, creating identification opportunities for female participants and modelling successful diabetes management approaches.

Also, V2 generated strong positive emotions through its clear video and sound quality that "triggered awareness", "good testimonial content that provided social proof", statistical facts and information that enhanced credibility while remaining "very concise" and "not feeling difficult", and text or subtitles that made content "easy to understand" for participants with different learning preferences. Meanwhile, V10's emotional effectiveness stemmed from its sentimental voice tone that conveyed caring and created emotional connection, touching music that enhanced emotional impact, and clear, concise message delivery that was both informative and "provoking" of emotional response.

Table 7: Items and Categories of Least Important Videos

Video	Items	Categories
V5	Graphic	Boring
	2D Animation	Not suitable
	Information	Disorganized
		Unrelated
V8	Cinematography	Too much
		Not compelling
	Background	Too dull and dark
		Not fitting the concept
	Actor	Too much walking
V1	Graphic	Too fast
		Not engaging
		No voice to explain
	Advertisement	Not suitable
	Music	Music too slow
		Feel empty
V9	Fact	Too factual – difficult to understand
		The terms not for layman
	Tone	Too academic
	Audio	Unbalanced with background music
	Subtitle	No subtitle or text to explain
V6	Graphic	Inappropriate
	Background colour	Dull and bad colour coding
	Caption	Too fast and no time to read
	Timing	Too short

In contrast, the least important videos – as illustrated in Table 7, demonstrated systematic design flaws that generated negative emotions and reduced engagement with diabetes prevention messages. For example, V5's poor performance was attributed to boring graphics, inappropriate 2D animation, and disorganized information that felt unrelated to participants' needs and experiences. For V8's, a negative emotional impact resulted from excessive cinematography that was "not compelling", background elements that were "too dull and dark" and "not fitting the concept", and actors with "too much walking" that distracted from the health message. V1 generated negative emotions due to graphics that were "too fast", "not engaging", and lacked voice explanation, advertisement-style presentation that felt "not suitable" for health education, and music that was "too slow" and created an "empty feeling" among viewers.

Also, V9's poor emotional reception was caused by overly factual content that was "difficult to understand" with "terms not for layman", academic tone that created emotional distance, unbalanced audio with background music, and lack of subtitles or explanatory text that made content inaccessible. Moreover, V6's negative emotional impact resulted from inappropriate graphics, dull and poorly color-coded backgrounds, captions that were "too fast with no time to read", and timing that was "too short" to convey meaningful information or create emotional connection.

The systematic analysis of design elements and emotional responses revealed that effective prediabetes prevention videos required careful attention to multiple production dimensions simultaneously. Visual elements needed to be professionally produced, culturally relevant, and emotionally appropriate for the health message being conveyed. Audio elements, including narration, music, and sound effects, needed to support rather than distract from the health content while creating appropriate emotional tone. Pacing and information density required careful calibration to ensure comprehension without

overwhelming viewers or creating boredom through insufficient content. Most importantly, the analysis showed that emotional engagement was not simply an added benefit but a fundamental requirement for effective diabetes prevention communication, as videos that failed to create positive emotional connections consistently failed to motivate prevention behaviours regardless of their informational accuracy or production quality.

DISCUSSION

Integration of Rational and Emotional Processing

This study provides empirical evidence for the EPPM's theoretical proposition that behavioural decisions result from the interaction between rational efficacy evaluations and emotional threat responses. Our findings extend previous EPPM research by demonstrating that positive emotions can enhance efficacy beliefs while negative emotions may undermine them, creating feedback loops not fully captured in the original model. This aligns with recent affective science research showing that emotions influence cognitive processing of health information (Smith et al., 2022) but contradicts earlier assumptions that emotions and cognition operate independently in health decision-making (Jones & Wilson, 2019).

The identification of four distinct rational-emotional combinations provides practical guidance for health communicators, suggesting that emotional tone must be carefully matched to audience efficacy levels. This finding supports recent meta-analytic evidence that emotional congruence with efficacy beliefs predicts stronger behavioural outcomes (Henkel et al., 2017), while extending this principle specifically to video-based diabetes prevention communications.

Behavioural Change Measurement Clarification

This study measured behavioural intention and self-reported likelihood of behaviour change rather than actual behavioural outcomes. Content analysis and video ranking revealed design elements that influence emotional responses, which are established predictors of behavioural intention in health communication research. The EPPM framework specifically links emotional and efficacy responses to behavioural intentions, which have been validated as reliable predictors of actual behaviour change in diabetes prevention contexts (Wilson et al., 2022). Future longitudinal research is needed to directly measure behavioural outcomes following exposure to videos designed based on these emotional-efficacy principles.

CONCLUSION

This study demonstrates the pivotal role of emotional responses in prediabetes prevention communications through systematic investigation using EPPM framework, complemented by EGML and LEIQ™ adaptation. Effective prediabetes videos share characteristics including clear storylines, authentic narratives, accessible language, and actionable information generating positive emotional responses critical for behaviour change. EPPM analysis provides frameworks for developing segmented communication strategies based on audience threat and efficacy perceptions, with different approaches required for each quadrant.

The methodological integration of emotional assessment with EPPM represents significant contribution to health communication research in Malaysia, where diabetes prevalence continues rising. By mapping emotional responses to design elements within EPPM quadrants, this study offers practical guidance for developing targeted prevention communications addressing unique psychological needs of at-risk populations. Future

campaigns would benefit from this segmented approach, using appropriate strategies for each audience segment. This emotion-centred, audience-segmented approach holds promise for addressing Malaysia's growing diabetes epidemic through more effective prevention.

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