Using SEM Model for Fighting Diabetes:
Strategic Communication Plan in Jakarta City, Indonesia

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ABSTRACT

Diabetes mellitus is a significant public health issue, with Jakarta, Indonesia, facing the highest prevalence in the country. The need for effective health campaigns is urgent, especially with Indonesia ranking sixth globally in diabetes-related deaths. Despite existing government efforts, a lack of awareness and understanding of diabetes remains a key factor in the rising number of cases. This highlights the need for an effective strategic communication plan to address diabetes prevention in Jakarta. This study aims to design a strategic communication plan using the Socio-Ecological Model (SEM) to combat diabetes in Jakarta, integrating proactive and reactive strategies through a media network approach. A qualitative research supported by a questionnaire without statistical testing was used, involving interviews with health professionals and diabetes patients. Data from literature studies were also analyzed to inform the campaign framework. The study highlights the importance of proactive strategies, such as mass media and social media activation, along with reactive strategies using fear-based messaging. A media network strategy utilizing QR codes for easy access to information was also found to be effective. A comprehensive communication strategy, engaging the government, local communities, and media, is essential in addressing the diabetes crisis in Jakarta. Further studies should assess the effectiveness of this communication plan and explore its scalability to other regions with high diabetes prevalence, focusing on long-term health outcomes.

Keywords: *Anti-diabetes campaign, communication in healthcare, propaganda PR strategy, socio-ecological model, strategic communication plan.*

INTRODUCTION

Diabetes is an international chronic (long-lasting) disease that not only significantly reduces life quality, but also has the risk for offspring throughout the course of their lives if one or both parents have the condition (Stene et al., 2023). Diabetes is also known as the mother of disease because it can cause other diseases (Robertus, 2022) such as thyroid disease, diabetes insipidus, oral issues, moderate to severe insulin resistance, pancreatitis, etc. Diabetes also gives a bigger risk of developing certain types of cancer (Zhu & Qu, 2022).

The person who has diabetes becomes fatigued, has extreme hunger, and experiences other problems over time (NIA, 2024). As a major cause of blindness, kidney failure, heart attacks, stroke, and lower limb amputation, prevalence has been rising more rapidly in low and middle-income countries than in high-income countries (WHO, 204).

According to the latest recent data provided by the International Diabetes Foundation (IDF), the number of people with diabetes is predicted to reach 1.3 billion by 2050 (Griffin, 2023). There are 537 million individuals (aged 20 to 79) worldwide who have diabetes, which is equal to 2.5% of the global population. IDF notes, 1 in 10 people in the world live with diabetes (Susanty & Hartanto, 2022). The IDF also mentions that around 44 percent or 240 million people with diabetes are undiagnosed.

It was reported that 236 thousand people have died in Indonesia as a result of diabetes. (Susanty & Hartanto 2022). This places Indonesia in sixth place, under China, the United States, India, Pakistan, and Japan. Seeing the trend, the number of diabetes cases is in line with the large population in one country. However, this cannot be an excuse for not at least taking preventive or countermeasures (Susanty & Hartanto, 2022).

Based on data from the 2018 Basic Health Research (Riskesdas) from the Indonesian Ministry of Health, the province with the highest prevalence of Diabetes Mellitus (DM) in Indonesia is DKI Jakarta, which is 3.4% (Oktora & Butar, 2022). Diabetes which is the third killer disease in Indonesia (6.7%) after stroke and coronary heart disease (Natalia, 2024). The Ministry of Health emphasized that controlling diabetes is one of the responsibilities of local governments (Ahdiat, 2022).

The regulatory framework supporting diabetes control is robust. Government Regulation Number 2 of 2018, Minister of Home Affairs Regulation Number 100 of 2018, and Minister of Health Regulation Number 4 of 2019 mandate that efforts to control diabetes mellitus are part of the minimum health services that regional governments must provide. Furthermore, Presidential Decree No. 1 of 2017 promotes the adoption of healthy lifestyle behaviour, targeting both individuals at risk and those already living with diabetes (Ahdiat, 2022).

The issue of diabetes gained renewed public attention in September 2022, sparked by a viral discussion on Twitter. A consumer complained about the excessive sweetness of a beverage product, suggesting it could contribute to a nationwide diabetes crisis (Simbolon, 2022). This debate gained traction, drawing input from celebrities, marketing experts, and health professionals. The incident also reignited discussions about the government's plan to impose an excise tax on sweetened beverages as part of broader public health efforts.
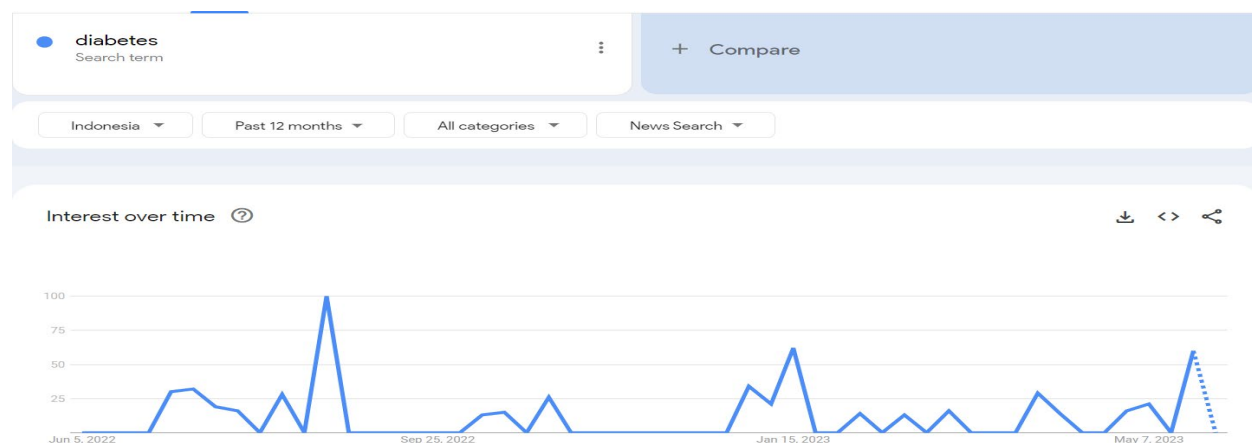

Figure 1: Graph of News on Diabetes in Indonesia for the period 2022-2023
(Retrieved from Google Trends in year 2023)

Discussions on the topic of diabetes have fluctuated in the Indonesian timeline. After being widely discussed in the period September - October 2022, the topic of diabetes resurfaced in early 2023. This is related to data issued by the Indonesian Pediatrician Association (IDAI) on February 1st 2023, occurrences of diabetes in youngsters climbed 70 times between 2010 and January 2023 (Suprodjo, 2024).

The issue of diabetes prevention and education has not been effectively addressed in Indonesia, particularly in mass media coverage and anti-diabetic programs, which remain suboptimal. Research by Golden and Earp recommends utilising a social-ecological model to guide health practices, emphasising the interaction between individuals and their environments (Bernhardt & Amiri, 2024). Additionally, a study on an 18-month television advertising campaign demonstrated a 1.2% reduction in smoking prevalence, underscoring the importance of sustained health communication efforts (HDA, 2004).

These findings highlight the necessity for comprehensive communication planning in diabetes mellitus (DM) campaigns, conducted over an extended period. Building on this, the study focuses on developing a strategic communication plan using the socio-ecological model, specifically tailored to Jakarta, which has the highest diabetes prevalence in Indonesia. Communication planning is recognized as a crucial tool for facilitating behavioral change, making it an essential approach to addressing this escalating public health issue (Putri & Oktaviani, 2022). The output of this study will present a strategic communication plan, where objectives, strategies, tactics, and measurement parameters are discussed to evaluate the effectiveness of the proposed interventions.

RESEARCH BACKGROUND

Effective communication strategies are essential in addressing public health crises (Ritonga, 2022). This strategic communication plan is conceptualized on a socio-ecological model in its design as suggested by Golden & Earp (2012), presumably the most effective health communication plan model. The strategy's remarkable success in tobacco control makes it a potential blueprint for implementing new approaches in enhancing health across various important domains (Pierce & Kealey, 2015).

The model can also be effectively related to a strategic public relations campaign. The socio-ecological model recognizes that individuals' health and behaviors are influenced by various interconnected factors at multiple levels, including individual, interpersonal, community, and societal levels. This model can provide a comprehensive framework for designing a strategic public relations campaign that addresses diabetes awareness and prevention.

Socio-Ecological Model (SEM)
The social-ecological theory conceptualizes individual development as a dynamic system shaped by interactions across multiple environmental levels. This perspective provides valuable insights for educational practices and enhances the understanding of diverse developmental contexts (Guy-Evans, 2024). By considering influences at the individual, household, and community levels, social-ecological theories offer a holistic framework for analyzing health behaviors. This approach acknowledges the interconnected nature of factors driving individuals' decisions and actions,

providing a realistic lens for understanding why people adopt or refrain from certain behaviors (Dassah et al., 2022).
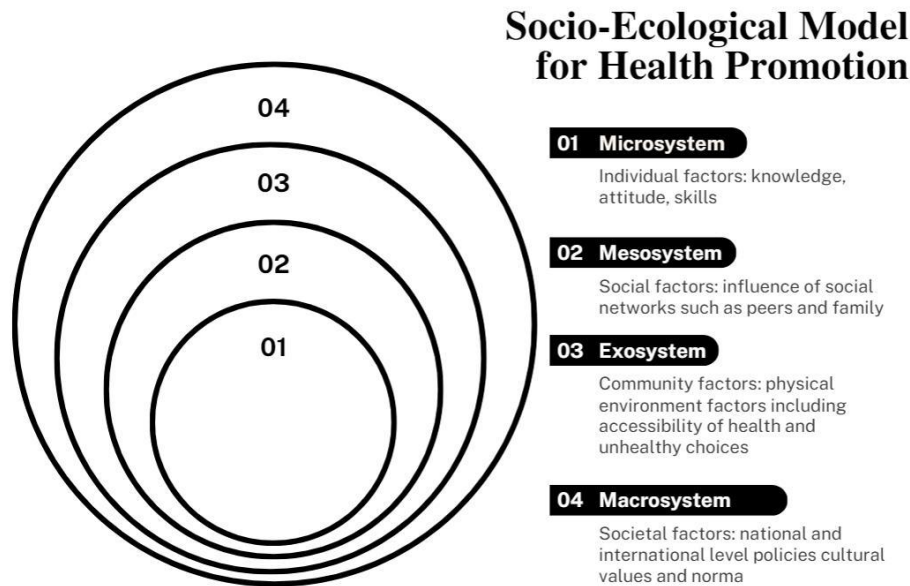

Figure 2: Socio-Ecological Model (SEM) for health promotion

At the microsystem level, various biological and personal factors—such as age, education, income, substance use, and a history of diabetes—are identified as key contributors to diabetes risk. Prevention efforts within this domain focus on cultivating attitudes, beliefs, and behaviors that support healthier lifestyles. Strategies include enhancing knowledge about the importance of maintaining a healthy lifestyle not only for oneself but also for family and future generations. These efforts involve promoting access to healthier product choices and leveraging social and emotional learning to build self-awareness. This heightened self-awareness serves as the foundation for sustainable lifestyle changes.

Mesosystem at the second level, also called the interpersonal level, where individuals have close relationships with other individuals. The impact of close relationships on the development of diabetes mellitus is explored. The immediate social circle, consisting of peers, partners, and family members, plays a significant role in influencing behaviors and shaping experiences. Prevention strategies at this level encompass targeted programs aimed at families, relatives, or close friends, with the objective of enhancing lifestyle awareness and fostering positive peer norms.

The third level of SEM is the exosystem or community level. This level of analysis investigates various settings, including schools, workplaces, and neighborhoods, to identify characteristics linked to individuals being diagnosed with diabetes. Prevention strategies at this level concentrate on enhancing the physical and social environment within these settings. This can be achieved by promoting healthy lifestyles where individuals reside, learn, work, and engage in recreational activities, as well as addressing other conditions that contribute to unhealthy behaviors.

Macrosystem or societal level of analysis examines the broader societal factors that contribute to the prevalence or prevention of diabetes mellitus. This encompasses social and cultural norms that either normalize or discourage the condition. Additionally, significant social factors include health, economic, educational, and social policies that impact individuals' ability to maintain a healthy lifestyle. Prevention strategies at this level focus on promoting societal norms that discourage unhealthy behaviors, as well as implementing policies that support and enhance healthy lifestyles and address structural determinants of health.

Proactive-Reactive Public Relation Strategy
PR strategy is not a brand strategy, not an advertising strategy, but a communication strategy. The effective strategy provides leadership of thought and activity processes for the communication program, the context, and a guiding principle for all communication activity, and it refers to the link between the 'why' and the 'how' of the logic that binds objectives and tactics together (Andersson, 2024).

A proactive strategy is an organizational initiative to engage the public. This strategy is most effective because it is implemented according to the organization's planning to create harmony between the organization and its vital public (Chaowichitra et al., 2023). Examples of proactive strategies:
   a. Audience engagement (community event, giveaway, etc)
   b. Audience interest (information, tips, etc
   c. Audience participation (product sampling, free service trial)
   d. Audience feedback (toll-free phone numbers, online surveys, interactive websites)
   e. Triggering event
   f. Special event
   g. Alliance and coalition (association, partnership)
   h. Sponsorship
   i. Strategic philanthropy

Reactive strategies are needed when an organization faces accusations or criticism or difficulties. Issue management and crisis communication are the majority of good examples of 'reactive' systems. In responding to outside forces, organizations should develop objectives such as: gaining public understanding, maintaining and restoring reputation, rebuild trust and support (Gasana, 2024). Examples of reactive strategies:
   a. Reactive Strategy 1: Pre-emptive Action (to prevent attack)
   b. Reactive Strategy 2: Offensive Response
      i. Attack: often such counter-punches backfire
      ii. Embarrassment
      iii. Shock: to create nervousness in the mind or emotion by using a surprise
      iv. Threat: involving the promise that harm will come to the accuser of bad news

c. Reactive Strategy 3: Defensive Response
  i. Denial
  ii. Excuse
  iii. Justification
  iv. Reversal

METHODOLOGY

This study employs a qualitative method supported by a questionnaire without statistical testing. A qualitative approach was employed through interviews with four key informants, providing in-depth insights into the root causes of the rising diabetes cases in DKI Jakarta. The interviews were conducted in two stages: the first with an expert on epidemiology and an internist doctor to understand the broader healthcare context, and the second with a family member of a diabetes patient and an individual with a hereditary history of diabetes to incorporate personal perspectives. Complementing the qualitative data, a quantitative approach was used by distributing a questionnaire to 138 residents of DKI Jakarta to assess public awareness regarding diabetes and related government initiatives.

Additionally, the study incorporated a literature review as a secondary data source. This review provided a comprehensive examination of existing research, theories, and frameworks related to diabetes prevention and health communication strategies. By integrating scholarly articles, reports, and previous studies, the literature review helped contextualize the findings from both the interviews and surveys, supporting the development of a strategic communication plan. This combination of methods strengthened the research's foundation and contributed to identifying knowledge gaps, ultimately guiding the creation of a more effective communication strategy for combating diabetes.

This strategic communication plan for anti-diabetes is titled "Sehat Itu Manis" (Health is Sweet), aiming to offer a new perspective to the audience. The title emphasizes that it is not the sweetness of food that promotes health, but rather maintaining a healthy and fit body that makes life truly sweet. By shifting the focus from sugar and indulgence to overall wellness, the campaign seeks to encourage individuals to prioritize physical health and well-being as the foundation of a fulfilling life. This approach aligns with the broader objective of raising awareness about diabetes prevention and promoting healthier lifestyle choices in a relatable and engaging manner. Through this campaign, the message is clear: true sweetness comes from good health, not from sugar-laden foods and beverages.

Interviews with Key Informants
First, interviews were held with key professionals: (A1) the Head of the Epidemiology and Immunization Surveillance Section at the DKI Jakarta Health Office and (A2) an expert internist from RSUP Fatmawati. These interviews aimed to uncover the root causes behind Jakarta's high diabetes prevalence, drawing insights from a public health and medical perspective. The perspectives of these two professionals are crucial as they offer both policy-level and clinical insights, enabling a comprehensive understanding of diabetes risk factors and prevention strategies.

Second, interviews were conducted with individuals personally affected by diabetes: (N1) the child of a parent with diabetes and (N2) an individual with a family history of diabetes. These perspectives provide valuable insights into the lived experiences, familial impact, and behavioral influences related to diabetes, enriching the communication strategy with a human-centered approach. The selection of four informants is justified by their ability to provide diverse and representative viewpoints across public health, medical expertise, and personal experiences, which are essential for crafting an effective strategic communication plan.

Table 1: Table of informant's profile

Code	Role	Relevance
A1	Head of the Epidemiology and Immunization Surveillance Section at the DKI Jakarta Health Office	Provides insights into public health policy and epidemiological trends in Jakarta.
A2	Internist Doctor at RSUP Fatmawati	Offers clinical expertise and understanding of diabetes treatment and prevention strategies.
N1	Son of diabetics patient	Shares familial perspectives and the behavioral impacts of diabetes awareness.
N2	Neonatal diabetes	Highlights genetic and lifestyle-related concerns from a personal perspective.

Survey Data Collection
In addition, a mini questionnaire was distributed to 138 residents of Jakarta to assess their knowledge of diabetes. The survey data provided a quantitative foundation, enabling the identification of knowledge gaps and reinforcing the qualitative findings.

Table 2: Percentage of respondents by age category

Category	Percentage of Respondents
Age (15-24 years)	2.9%
Age (25-34 years)	31.6%
Age (35-44 years)	49.3%
Age (45-54 years)	12.5%
Age > 55 years	3.7%

This methodological design using SEM ensures a robust foundation for the strategic communication plan, integrating professional, personal, and community perspectives to address diabetes prevention effectively.

RESULTS AND DISCUSSION

The authors conducted an online questionnaire between 12th – 29th July 2023 to find out public perceptions on diabetes. The results of the online questionnaire can be seen in Figure 3 below.

Figure 3: Word cloud of public perception about anti-diabetes campaign in Indonesia language

Figure 3 illustrates that the words 'sugar' and 'sickness' were the most common associations made by respondents when they first heard the term 'diabetes'. Additional insights gathered from the distribution of the questionnaire include the following:

Table 3: Survey results on public awareness and knowledge of government diabetes campaigns and education

Questions	Yes	No
Do you know of any current anti-diabetes campaigns run by the government?	16.8%	83.2%
Are you aware of any government activities or initiatives promoting diabetes prevention and awareness?	23.3%	76.7%
Have you ever received educational materials from the government about diabetes?	16.2%	83.8%
Are you aware of recent diabetes research funded by the government?	6.6%	93.4%
Do you know of any government agencies or organizations involved in diabetes awareness and prevention?	2.6%	97.4%
Have you ever encountered public service announcements about diabetes on TV, radio, or social media platforms?	43.1%	56.9%
Do you believe that diabetes education should be conducted?16.8%	98.5%	1.5%

The questionnaire results were analyzed alongside the interview data from the four key informants, including diabetes experts, to identify the root causes behind the rising prevalence of diabetes in Indonesia, particularly in DKI Jakarta. The data from the questionnaire, which showed a lack of awareness among the majority of respondents regarding government campaigns and educational initiatives, highlighted a significant gap in public knowledge about diabetes prevention and management.

> Yes (a lack of public awareness on DM), as Jakarta is too heterogeneous, like a Mini Indonesia. Therefore, the disparity in socio-economic education and the lifestyle gap is too high. That's why we really have to create the best Urban Health Benchmark in Jakarta (informant A1)

The exact cause of type 2 diabetes is multifactorial, one of the main being obese and physically inactive. In the last decade, lifestyle changes that adopts more of western lifestyles (instant food, junk food, etc.) have led to an increase in obesity and insulin resistance, which causes DM 2 rate to increase (informant A2)

Informants A1 and A2, both diabetes experts, also indicated that the awareness campaign regarding diabetes (DM) has not yet been fully optimized. Similarly, informant N1 expressed hope that the government would intensify efforts to raise awareness about diabetes and promote healthier lifestyle choices. This issue is further compounded by the prevalence of unhealthy lifestyles among the residents of DKI Jakarta, which has been identified as a key factor contributing to the increase in DM cases.

An environment that has awareness about diabetes and has a healthy lifestyle (hopes to prevent diabetes in the past) (Informant N1)

As supported by the interview results and questionnaire findings, this study also incorporates a literature review of previous research, analysed through the five layers of the socio-ecological model (SEM). This approach aims to enhance the foundational understanding of the root causes of the issue and to explore how each layer of SEM contributes to and influences the problem. The findings are summarised and structured in Table 4 for clarity and comprehensive insight.

Table 4: Table of diabetes root cause analysis

SEM	Predictors to cause an increase in the number of people with diabetes	Predictors to be done to reduce cases of diabetes
Individual	Individuals are less aware of their own health conditions: overweight, lack of physical activity, and poor nutrition (Kandou et al., 2019).	carry out regular health checks (WHO, 2024).
Interpersonal - Family	lack of diabetes knowledge and support in healthy lifestyle / physical activity	knowledge of diabetes and living in healthy lifestyle (Lontaan et al., 2024).
Interpersonal - Peers	lack of awareness of lifestyle that affects health	support each other to have a healthy lifestyle
Community	lack of healthy food and drink options	rules to minimise the use of gadgets in children
Government	no restriction on the consumption of sweetened products for children	regulation of rules for limiting the sale of sweetened drinks

Goal and Objectives
The primary goal of this health campaign is to foster a societal shift toward healthier lifestyle practices, ultimately reducing the prevalence of diabetes in Jakarta. To achieve this overarching goal, the campaign focuses on two specific objectives: communication objectives and behavioural objectives.

The campaign seeks to enhance public knowledge and awareness, serving as the foundation for informed decision-making and lifestyle changes. The communication objectives are as follows:

a. To increase awareness among diabetes patients regarding the importance of managing their condition effectively.
b. To elevate public understanding of the risks and dangers posed by diabetes.

Building on the knowledge disseminated through the campaign, the behavioural objectives emphasize actionable changes in lifestyle and healthcare engagement:

a. To encourage individuals to adopt and maintain healthy behaviours, such as balanced diets and regular physical activity.
b. To motivate individuals to proactively access healthcare services, including diabetes screening and management programs.

By addressing these objectives, the campaign aims to create a comprehensive and sustainable impact on both individual and community health outcomes, leveraging effective communication to drive long-term behavior change.

Strategic Proactive-Reactive Communication Plan
The study recommends integrating proactive and reactive strategies within the proposed communication plan to establish a comprehensive approach to combating diabetes. Proactive strategies are designed to prevent health issues before they arise, while reactive strategies focus on managing and addressing existing health problems. This combination ensures a more sustainable impact by preventing new diabetes cases and effectively managing current ones, ultimately fostering long-term behavior change and improved public health outcomes.

Leveraging the Social-Ecological Model (SEM), the study advocates for health campaigns initiated by the government and then cascaded to communities and individuals. The government is identified as the most capable entity for leading such efforts due to its authoritative influence, systemic capacity, and extensive resources. These include funding for research and program development, infrastructure to support initiatives, and mechanisms for large-scale implementation. Additionally, the government's ability to reach diverse population groups and foster collaborative partnerships positions it as a pivotal force in promoting comprehensive health interventions. Importantly, the government's role in establishing policies and regulatory frameworks further strengthens the foundation for impactful health campaigns.

This recommendation aligns with insights shared by key informants during the interviews, underscoring the necessity of a government-led approach to addressing the diabetes epidemic effectively.

> In my opinion, it should be initiated by the government from the lowest to the center as this will be a rebound in the future, especially in the health sector at a young age (informant N2)
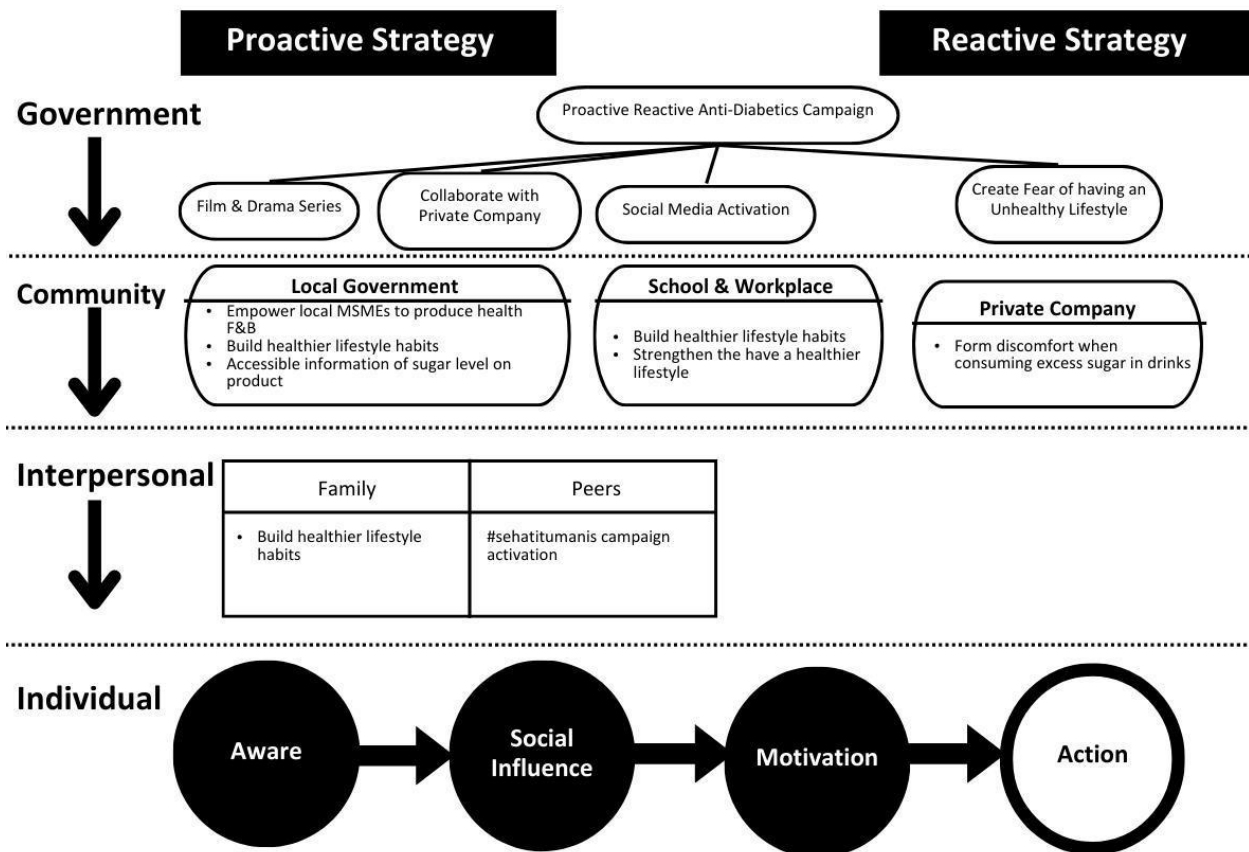
Figure 5: Proactive-reactive communication strategy for fighting diabetes

At the central government level, represented by the macrosystem in the Social-Ecological Model (SEM), a proactive strategy that can be effectively implemented is the use of mass communication media, such as films and drama series. These forms of audiovisual media have a unique ability to create the illusion of life and reality while simultaneously presenting alternative perspectives (Chistyakov, 2020). This makes it easier for viewers to understand and internalize the intended message.

Films, in particular, offer a rich medium for communication as they not only depict compelling stories but also present a background, environment, and characters whose behaviours can model desired attitudes or actions. Every motion picture serves as a strategic vehicle to embed and deliver key messages in a relatable and engaging format, making it an ideal tool for health campaigns aiming to raise awareness and influence behaviour at a large scale. This approach capitalizes on the emotional and cognitive engagement that visual storytelling naturally fosters, ensuring the campaign's message resonates with diverse audiences.

Two proactive strategies will be implemented. First, by having actors or actresses visibly prefer mineral water over sugary drinks, either through dialogue or gestures, such as verbally endorsing mineral water or rejecting sugary beverages. Second, by depicting characters with diabetes, like two girls wearing blue patches representing "insulin infusion sets" for Type-1 Diabetes, which visually informs viewers about the condition (Nguyen, 2022). The aim is to

illustrate the challenges of living with diabetes, emphasizing its impact on daily life. While not central to the plot, diabetes-affected supporting characters should appear in various film genres (comedy, romance, war, etc.) to raise awareness.

The utilization of social media represents a significant component of the proactive strategies proposed in this communication plan. The authors recommend social media activation led by the government, using these platforms to share healthy food and beverage ideas curated by chef-influencers. This approach aims to subtly instil an understanding of a healthy lifestyle among audiences by promoting a nutritious daily menu. Such content can create an engaging, relatable pathway for individuals to adopt healthier habits, highlighting the essential role of dietary choices in diabetes prevention and management.

Research supports this strategy, showing that opinion leaders, such as influencers, often possess five key attributes that sway public decision-making: personality, authenticity, trustworthiness/credibility, professional expertise, and social standing (Lynn-Sze & Kamaruddin, 2021). Furthermore, studies indicate that individuals are likely to emulate the behaviors of people they follow on social media, underscoring the importance of this activation in influencing public attitudes and behaviors (Vardya & Nurhajati, 2022).

In addition to social media, the authors propose collaboration with private companies as a vital element of the campaign. This collaboration could include incentive systems encouraging individuals to achieve specific healthy lifestyle milestones, such as walking 10,000 steps per day—a goal proven to contribute significantly to physical well-being (Paluch et al., 2022). One informant during the interviews also highlighted the potential of such incentive-based approaches, emphasizing their practicality and motivational impact for public engagement:

> Cooperation with start-ups. For example, ohhh he can do 6000 steps a day, his goals are achieved; then he sleeps 7 hours a day, doesn't smoke, maintaining his calories, stays balanced or minus i.e., a calorie deficit; then he exercises, becomes healthier. The more he completes, the higher the incentives or points (informant A1)

As part of a reactive strategy, the government can leverage both digital and conventional media to emphasize the risks of maintaining an unhealthy lifestyle. This approach aims to evoke emotional responses, such as fear or sadness, to encourage individuals to reconsider their current habits.

In the realm of digital media, collaboration with social media influencers—particularly those managing widely followed gossip accounts on platforms like Instagram—can be an effective tactic. These influencers, often categorized as mega influencers, have previously been utilized by private companies selling health products to share compelling stories that resonate emotionally with their audiences. By highlighting narratives of diabetics or their close relatives, the campaign can foster empathy and concern, creating a strong emotional connection that motivates behaviour change. Such strategies not only capitalize on the extensive reach of these influencers but also demonstrate the effectiveness of emotionally-driven content in driving public awareness and action.

As conventional media, outdoor advertisements could reach the public when outside the house. By using this tactic, outdoor advertisement serves to create fear about the dangers of diabetes, they use digital illustration which combines photo and visual design that depict a paradox between sweetened products and diabetes risk, such as a picture of a cupcake missing a leg, or a picture of a candy in the shape of a hollow tooth. This outdoor advertisement will be carried out with the same design in several media, including billboards, neon boxes, hanging advertisements on MRT, Jabodetabek (Jakarta, Bogor, Depok, Tangerang & Bekasi) Commuter line & TransJakarta Bus. In every corner of the outdoor advertisement, a QR barcode will be displayed which is integrated with the campaign website.

At the community (exosystem) level, the authors divide it into three areas, namely local government (city or regency government), schools & workplaces, and private companies. This is because these three areas are the community levels that have the most influence on the daily lives of individuals.

Local governments can utilize local Micro Small Medium Entreprises (MSME) to produce healthy food and drinks, through the implementation of product production training. As part of proactive strategies, the local government can also carry out regular health check-ups for its citizens. Even though it is considered a simple step, the key informants in this study considered that this is actually the main thing that needs to be done, thereby encouraging individuals to be more aware of their own health. This is as stated in the following interview excerpt:

> What needs to be addressed (from the soaring cases of Diabetes Mellitus in Indonesia), of course, is screening and early detection, starting from toddlers through local healthcare centers (Posyandu), then The Integrated Center for Disease Development Detection (POSBINDU PTM) that will target high school students as well as those aged 15 and over (informant A1)

Similarly, providing clear information about the sugar content in artificially sweetened foods and beverages is an essential initiative that the government should undertake. Including a label on packaging that indicates the sugar content alongside the recommended daily sugar intake and the maximum consumption limit for maintaining a healthy lifestyle can significantly enhance public awareness.

This approach aims to empower individuals to make informed decisions about their dietary habits, encouraging moderation and healthier choices. Informant A2 also emphasized the potential effectiveness of this strategy, noting its positive impact on raising awareness and supporting the objectives of the anti-diabetes campaign, as reflected in the following statement:

> Improve the regulation of the inclusion of sugar values in food products (informant A2)

At the community level, schools and workplaces serve as pivotal agents in fostering healthier lifestyle habits. They can achieve this by providing access to mineral water dispensers, restricting the availability of sweetened beverages, or substituting regular sugar with low-calorie alternatives, particularly in office settings. Additionally, these institutions can implement

incentive systems or assign extra evaluation points to students or employees who successfully maintain or improve their health. Regular health check-ups can further enhance these efforts, reinforcing a culture of wellness in these environments.

The use of subliminal messaging has been shown to influence mental states (Ahmadi & Akbari, 2023), making it a valuable tool for health campaigns. Schools and workplaces can utilize this strategy by incorporating motivational health quotes into wall decorations, subtly encouraging healthier behavior among individuals.

In terms of reactive strategies, private companies also play a critical role. For instance, discomfort associated with excessive sugar consumption can be addressed through innovative solutions, such as drink containers equipped with sugar detectors. A practical example could be tumblers that feature blinking light indicators when the sugar content of the beverage exceeds a predetermined threshold.

At the next level of the SEM model—the interpersonal domain, which includes the individual's immediate environment—the role of family and peers becomes significant. This layer emphasizes the social context that directly influences individual behavior, highlighting the need for targeted interventions within these close-knit groups.

Both family and peer groups play a crucial role in fostering healthier lifestyle habits. Within the family environment, healthy routines can be instilled through consistent practices such as ensuring eight hours of sleep, engaging in daily exercise, carrying reusable tumblers when leaving the house, and incorporating herbal drinks into the diet. Among peers, mutual encouragement and participation in initiatives like the 'Healthy is Sweet' campaign—promoted on social media or through government-sponsored events—can significantly amplify the message and motivate collective action.

At the individual level, the Indonesian government has introduced the CERDIK program as part of its anti-diabetes initiative. The program emphasizes: 'Cek kesehatan' (routine health checks), 'Enyahkan' (avoiding cigarette smoke), 'Rajin' (regular physical activity), 'Diet' (a balanced diet), 'Istirahat' (adequate rest), and 'Kelola' (stress management), (Azizah, 2022). However, despite its comprehensive approach, the program appears to lack visibility. Based on a mini questionnaire conducted by on this study, 90% of respondents admitted to being unaware of any government-led anti-diabetes health campaigns.

This lack of awareness was also echoed by a key informant in this study, who suggested that the heterogeneity of the population in DKI Jakarta poses a significant challenge to the dissemination of such campaigns. The city's diverse demographics and cultural contexts complicate efforts to reach and engage every segment of the population effectively.

> Yes, because like this, Jakarta is too heterogeneous, it's true that Indonesia is mini, so eee, the disparity is too high, socio-economic education, so the lifestyle gap is too high, that's why we really have to create the best example of Urban Health in Jakarta (informant A1)

As illustrated in Figure 5, the individual is positioned as the fundamental actor in the Socio-Ecological Model (SEM), underscoring the critical role that individual actions play in the success of the health program, which was initially introduced by the government. This aligns with

the core framework of a public awareness campaign, which includes components such as validation, endorsement, motivation, and action (Evison et al., 2022).

In the present study, the terms 'validation' and 'endorsement' are adapted to 'aware' and 'social influence,' respectively, to better align with the context of the campaign and its target audience. While these new terms maintain the essence of their original meanings, the substitution serves to emphasize the specific stages within the health behavior change process. 'Aware' reflects the initial stage of raising individual consciousness about diabetes and healthy lifestyle choices, while 'social influence' captures the role of external factors, such as peers, family, and media, in shaping behavior. This adjustment is made to enhance the clarity and relevance of the framework within the context of the study, ultimately providing a more precise understanding of how these elements operate at the individual level.

The framework shows that in order to lead to individual action (behavior change), one must go through the stages of awareness/validation, social influence/endorsement from the surroundings, the emergence of self-motivation, and finally, the action taken. Improvement in healthy lifestyles, particularly in the context of reducing the prevalence of diabetes in the DKI Jakarta community, requires collaboration from various societal elements, as not only thepublic sensitisation efforts. As previous research has shown, collaborative efforts from multiple parties can have a positive impact and bring about significant change with shared benefits (Erubami et al., 2022; Nursanti et al., 2023).

Objectives, Strategies, Tactics, and Measurement Parameters
In this health campaign, not only are goals, objectives, strategies, and tactics proposed, but also measurement parameters to assess the success of the campaign. As a government-initiated health campaign, the relationship between these components is framed within the Socio-Ecological Model (SEM), as illustrated in Table 2 below:

Table 2: Table of SEM actors, objectives, strategies, tactics & measurement parameters

Socio-Ecological Actors	Objectives (Communication & Behaviour)	Strategies	Tactics	Measurement Parameter
Government	Raise awareness of diabetes patient	Film & drama series	Diabetics character on screen	Number of films with this character
	Encourage individuals to adopt healthier behaviors	Film & drama series	Character who prefer to have healthy life (ex drink mineral water than sweetened drinks) than unhealthy life	Number of films with this character
	Encourage individuals to adopt healthier behaviors	Collaboration with private company	Incentive of doing healthy life	Number of users who have redeemed points
	Encourage individuals to adopt healthier behaviors	Social media activation	Collaborate with Chefs for healthy menu	Number of healthy menus that have been created by chefs influencers

	Raise awareness of diabetes dangers	Create fear of having an unhealthy lifestyle	Reactive public advertisement	Number of accesses to the campaign website via QR barcode
Community - Local Gov	Encourage individuals to adopt healthier behaviors	Empower local MSMEs	Training to produce healthier food and drinks for local MSME	Number of MSMEs that produce healthy food and drinks
	Motivate individuals to access health service	Build healthy lifestyle habits	Regular health check-up	Number of city residents who regularly carry out health checks
	Encourage individuals to adopt healthier behaviors	Accessible information	Sugar level information label	Number of accesses to the campaign website via QR barcode
	Encourage individuals to adopt healthier behaviors	Accessible information	Healthy badge products for business	Number of badges already used by verified businesses
Community - School & Workplace	Encourage individuals to adopt healthier behaviors	Build healthy lifestyle habits	Mineral water dispenser placement	Number of private companies that are already running a healthy lifestyle
	Encourage individuals to adopt healthier behaviors	Build healthy lifestyle habits	Health life incentive pts	
	Encourage individuals to adopt healthier behaviors	Strengthen the Desire to have a Healthy Lifestyle	Health life quotes as wall decoration	
	Encourage individuals to adopt healthier behaviors	Build healthy lifestyle habits	Using only low sugar products	
	Encourage individuals to adopt healthier behaviors	Build healthy lifestyle habits	Limited availability for sweetened drinks	
Community - Private Company	Encourage individuals to adopt healthier behaviors	Form discomfort when consuming excess sugar in drinks	Tumblr with sugar level detector	Number of total distribution of tumblr with sugar level detector
Interpersonal - Family	Encourage individuals to adopt healthier behaviors	Build healthy lifestyle habits	Healthy life routine (8hrs sleep, family daily exercise)	Number of family that are already running a healthy lifestyle
	Encourage individuals to adopt healthier behaviors	Build healthy lifestyle habits	Own tumblr everywhere	
	Encourage individuals to adopt healthier behaviors	Build healthy lifestyle habits	Traditional herbal drink	

Interpersonal - Peers	Encourage individuals to adopt healthier behaviors	Campaign activation	Join #sehatitumanis campaign	Number of conversation trends in digital media using hastag #sehatitumanis

A media strategic plan is essential for effectively implementing a health campaign, particularly in raising awareness and encouraging behavior change. The integration of media is not just about selecting channels but also about how those channels are interconnected. This study utilizes the concept of a network society to establish a media strategy that connects various forms of indoor and outdoor media, creating a seamless communication network. As shown in Figure 6 below, indoor media such as the packaging of sweetened drinks, table numbers in restaurants, and the Jakarta city app (JAKI) are strategically connected to outdoor media like public transportation and billboards. These are linked through QR codes that direct individuals to the campaign's website, providing easy access to essential information
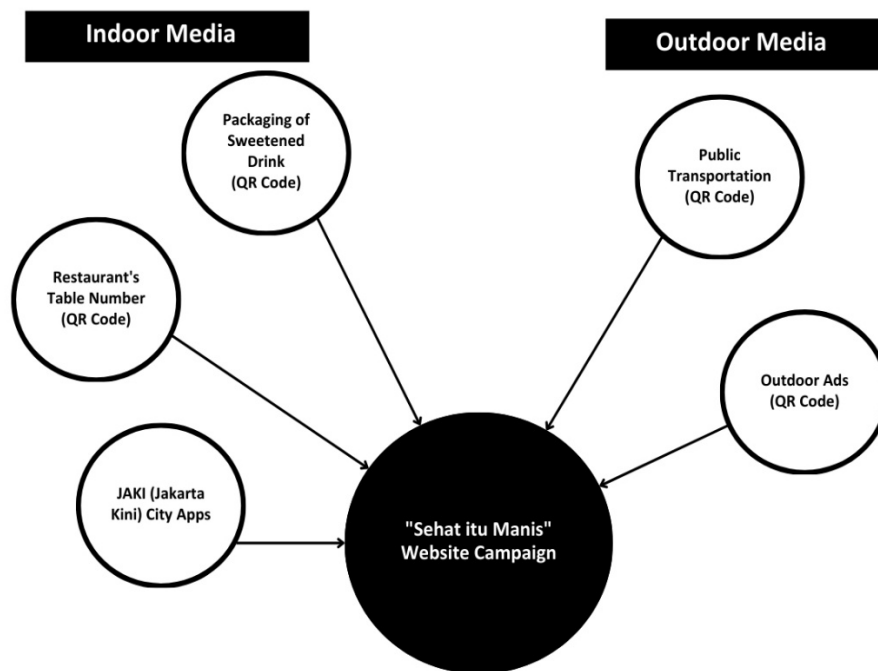

Figure 6: Media communication network strategy for fighting diabetes

Figure 6 illustrates the integration of indoor media, such as sweetened drink packaging, restaurant table numbers, and city applications (JAKI - Jakarta Kini), with outdoor media, including public transportation and outdoor advertisements. All these media are strategically connected to the campaign website via QR codes. This approach draws inspiration from Qatar's successful communication strategy during the FIFA World Cup 2022. The Qatari government utilized QR codes strategically placed in hotel corners, enabling visitors to easily access information about Qatari values and culture—a tactic widely praised for its simplicity and effectiveness in delivering key messages (MEE, 2022).

Similarly, this health campaign employs QR codes as a central tool for bridging physical and digital communication channels. By directing users to a campaign website, the QR codes create a streamlined, accessible pathway for individuals to engage with the campaign. The website serves as an essential hub, consolidating information and campaign activities in a user-friendly format. As emphasized by Mazlan et al. (2021), eHealth literacy plays a pivotal role in enhancing health information-seeking behaviors. This underscores the importance of creating an easily navigable digital platform, particularly when targeting audiences in urban settings where digital access is prevalent.

The campaign website is designed as the primary focal point of the communication strategy, displaying key messages through visually appealing infographics. It offers a range of resources, including:

a. Infographics on diabetes statistics and impacts in Indonesia.
b. A free e-book featuring healthy food and drink menus, inspired by viral content shared by key opinion leaders on social media.
c. Event schedules related to diabetes awareness and prevention.
d. Success stories from diabetes patients who have managed to recover and improve their lifestyles.

This comprehensive approach not only raises awareness but also provides actionable steps toward healthier living. By aligning with contemporary digital communication trends and leveraging user-friendly technology, the campaign is positioned to make a meaningful impact in fostering health literacy and promoting behavior change.

CONCLUSION

In conclusion, the rising prevalence of diabetes in Jakarta, Indonesia, underscores the urgent need for comprehensive and effective health communication campaigns. With Indonesia ranking sixth globally in diabetes-related deaths, and Jakarta having the highest diabetes rates in the country, it is evident that a targeted, multi-level approach is necessary to combat this public health crisis. This study presents a strategic communication plan based on the Socio-Ecological Model (SEM), combining proactive and reactive strategies with a well-designed media network. By leveraging mass media, social media, and collaboration with key stakeholders, such as private companies, schools, and workplaces, this plan aims to raise awareness, change behaviors, and promote healthier lifestyles among the Jakarta population.

The findings highlight the critical role of the government, local communities, and media in driving effective diabetes prevention efforts. Proactive strategies, including mass media campaigns and social media activation, can create a shift in public awareness, while reactive strategies, such as fear-based messaging about the consequences of an unhealthy lifestyle, can encourage behavioral change. Furthermore, the integration of innovative media strategies—such as using QR codes to connect various communication channels to a central campaign website—enhances accessibility and engagement with the target audience.

This study contributes to both academic and practical domains by providing a structured approach to health communication planning using the SEM model. Academically, it enriches the existing literature on public health communication by illustrating the application of SEM in the context of diabetes prevention in Indonesia. Practically, it offers actionable strategies for health

professionals, government bodies, and organizations seeking to design and implement effective health campaigns. Future research should focus on evaluating the effectiveness of this strategic communication plan through empirical studies and exploring the potential for scaling such initiatives to other regions with high diabetes prevalence. Additionally, further research could examine the long-term impact of these media strategies on public health outcomes and behavior change.

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REFERENCES

Ahdiat, A. (2022). Jakarta punya prevalensi diabetes tertinggi nasional. *Katadata Media Network*. https://databoks.katadata.co.id/datapublish/2022/09/28/jakarta-punya-prevalensi-diabetes-tertinggi-nasional

Ahmadi, R., & Akbari, M. R. (2023). The effects of subliminal message on human attitude change and effective advertising. *International Journal of Advanced Research (IJAR)*, *11*(11), 94–108. https://doi.org/10.21474/IJAR01/17806

Andersson, R. (2024). Public relations strategizing: A theoretical framework for understanding the doing of strategy in public relations. *Journal of Public Relations Research*, *36*(2), 91–112. https://doi.org/10.1080/1062726X.2023.2259523

Azizah, N. (2022, Nov 22). Kemenkes: 28,6 juta penduduk Indonesia diprediksi mengidap diabetes di 2045. *Republika.co.id*. https://ameera.republika.co.id/berita/rlqyg0463/kemenkes-286-juta-penduduk-indonesia-diprediksi-mengidap-diabetes-di-2045?#google_vignette

Bernhardt, J. M., & Amiri, A. (2024). Application of the socioecological model to mitigate risks of heat illness. *Nursing Outlook*, *72*(3), 102150. https://doi.org/nzfq

Chaowichitra, P., Uakarn, C., & Sintao, N. (2023). The development of proactive public relations strategy of Public Relations Department. *Rajapark Journal*, *17*(54), 168–185. https://so05.tci-thaijo.org/index.php/RJPJ/article/view/264063

Chistyakov, D. (2020, September 1). Media construction of social reality and communication impact on an individual. *Proceedings of 5th International Conference on Contemporary Education, Social Sciences and Humanities - Philosophy of Being Human as the Core of Interdisciplinary Research (ICCESSH 2020),* 141-144. https://doi.org/nzfr

Dassah, C., Domapielle, M. K., & Sumankuuro, J. (2022). Contraceptive use among female head porters: Implications for health policy and programming in Ghana. *Heliyon*, *8*(12), e11985. https://doi.org/10.1016/j.heliyon.2022.e11985

Erubami, J. A., Ojoboh, L. O., Ohaja, E. U., Ezugwu, M. N., & Akata, U. C. (2022). Mass media exposure and Lassa fever risk perception in rural communities of South-south Nigeria. *Jurnal Komunikasi: Malaysian Journal of Communication*, *38*(2), 56–71. https://doi.org/10.17576/JKMJC-2022-3802-04

Evison, M., Taylor, S., Grundy, S., Perkins, A., & Peake, M. (2022). Promoting early diagnosis and recovering from the COVID-19 pandemic in lung cancer through public awareness campaigns: Learning from patient and public insight work. *BMJ Open Repiratory Research*, *8*(1). https://doi.org/10.1136/bmjresp-2021-001120

Gasana, K. (2024). Crisis communication and reputation management in the age of fake news. *CARI Journals: Journal of Public Relations*, *3*(1), 28–39. https://doi.org/nzft

Griffin, M. (2023, June 22). More than 1.3 billion people worldwide predicted to have diabetes by 2050. *Time*. https://time.com/6289524/diabetes-worldwide-prediction-2050/

Guy-Evans, O. (2024). Bronfenbrenner's Ecological Systems Theory. *Simply Psychology*. https://www.simplypsychology.org/bronfenbrenner.html

Harjo, I. W. W., & Mahendra, R. A. (2024). Social network analysis in #PialaKemenpora: A dinamics of social system. *MIMBAR: Jurnal Sosial Dan Pembangunan*, *40*(1), 17–27. https://doi.org/10.29313/mimbar.vi.2059

Health Development Agency (HAD). (2004, June). The effectiveness of public health campaigns. http://www.prevencionbasadaenlaevidencia.net/uploads/PDF/RP_campaignsEffectivenes.pdf

Kandou, G. D., Ratag, B. T., Kalesaran, A. F. C., & Kandou, P. C. (2019). Obesity and lifestyle factors as determinants of type 2 Diabetes Mellitus in Manado City, Indonesia. *Malaysian Journal of Public Health MEdicine*, *19*(2), 54–60. https://doi.org/g4g4h4

Liu, W., Sidhu, A., Beacom, A. M., & Valente, T. (2017). Social network theory. In P. Rossler, C. A. Hoffner, & L. van Zoonen (Eds.), *The international encyclopedia of media effects*. John Wiley & Sons, Inc. https://doi.org/10.1002/9781118783764.wbieme0092

Lontaan, A., Adam, Y., Keintjem, F., & Sumiyati, S. (2024). The role of family in improving the management of diabetes mellitus patients. *Jurnal Edukasi Ilmiah Kesehatan*, *2*(2), 33–40. https://doi.org/10.61099/junedik.v2i2.43

Lynn-Sze, J. C., & Kamaruddin, A. (2021). Online opinion leaders in the health promotion digital era. *Jurnal Komunikasi: Malaysian Journal of Communication*, *37*(4), 295–309. https://doi.org/10.17576/JKMJC-2021-3704-17

Mazlan, A., Adzharuddin, N. A., Omar, S. Z., & Tamam, E. (2021). Online health information seeking behavior of Non-Communicable Disease (NCD) among government employees in Putrajaya Malaysia. *Jurnal Komunikasi: Malaysian Journal of Communication*, *37*(1), 419–433. https://doi.org/10.17576/JKMJC-2021-3701-24

Middle East Eye (MEE). (2022, November 25). Fans unite for Friday prayers during Muslim world's first World Cup. https://www.middleeasteye.net/news/qatar-world-cup-2022-fans-unite-friday-prayers-during-muslim-worlds-first-world-cup

Natalia, T. (2024, February 1). Diabetes jadi penyakit mematikan, konsumsi gula RI malah rekor. *CNBC Indonesia.* https://www.cnbcindonesia.com/research/20240130150442-128-510187/diabetes-jadi-penyakit-mematikan-konsumsi-gula-ri-malah-rekor

Nguyen, A. (2022, March 23). Pixar's "Turning Red" brings Type 1 diabetes out of the background. *Kpbs*. https://www.kpbs.org/news/local/2022/03/23/pixars-turning-red-brings-type-1-diabetes-out-of-the-background

National Institute of Aging (NIA). (2024, April 10). Diabetes in older people. https://www.nia.nih.gov/health/diabetes/diabetes-older-people

Nursanti, S., Tayo, Y., & Utamidewi, W. (2023). Interpersonal communication of midwives to reduce maternal and neonatal mortality in Indonesia. *Jurnal Komunikasi: Malaysian Journal of Communication*, *39*(3), 440–454. https://doi.org/nzfv

Oktora, S. I., & Butar, D. B. (2022). Determinants of Diabetes Mellitus prevalence in Indonesia. *Kemas*, *18*(2), 266–273. https://doi.org/10.15294/kemas.v18i2.31880

Paluch, A. E., Bajpai, S., Bassett, D. R., Carnethon, M. R., Ekelund, U., ... & Fulton, J. E. (2022). Daily steps and all-cause mortality: A meta-analysis of 15 international cohorts. *The Lancet Public Health, 7*(3), e219-e228. https://doi.org/10.1016/S2468-2667(21)00302-9

Pierce, J., & Kealey, S. (2015). Socio-ecological model and health promotion in the healthy people initiative. *eScholarship*. https://escholarship.org/uc/item/883092ft

Putri, A., & Oktaviani, R. C. (2022). Communication planning: A tool for behavior change. *Journal of Communication and Public Relations (JCPR)*, *2*(1), 24–32.

Ritonga, A. G. (2022). Reconnecting with the public: Communication strategies to address the hypertension crisis in Banjarmasin. *Journal of Communication and Public Relations (JCPR)*, *1*(2), 31–50. https://journal.lspr.edu/index.php/jcpr/article/view/763

Robertus, Y. (2022, May 13). Diabetes Mellitus "Mother of Various Diseases." *Hermina Hospitals*. https://www.herminahospitals.com/en/articles/diabetes-melitus-ibu-dari-berbagai-penyakit

Simbolon, H. (2022, Sept 26). Kronologi konsumen kritik soal kadar gula berujung somasi Es Teh Indonesia. *Liputan6.Com*. https://www.liputan6.com/regional/read/5079750/kronologi-konsumen-kritik-soal-kadar-gula-berujung-somasi-es-teh-indonesia

Stene, L. C. M., Norris, J. M., & Rewers, M. J. (2023). Risk factors for type 1 Diabetes. In J. M. Lawrence, S. S. Casagrande, W. H. Herman, D. J. Wexler, & W. T. Defalu (Eds.), *Diabetes in America* (1st ed., Vol. 1). Bethesta (MD): National Institute of Diabetes and Digestive and Kidney Disease (NIDDK). https://www.ncbi.nlm.nih.gov/books/NBK597413/

Suprodjo, H. (2024, July 30). Emergency: Pediatric dialysis cases rise dramatically, what's the cause? *Hermina Hospitals*. https://herminahospitals.com/en/articles/darurat-kasus-cuci-darah-anak-naik-drastis-apa-penyebabnya.html

Susanty, F., & Hartanto, A. Y. (2022, Oct 6). Data pahit di belakang minuman manis. *Tirto.id*. https://tirto.id/data-pahit-di-belakang-minuman-manis-gwBf

Vardya, R., & Nurhajati, L. (2022). Social news site: People's interest and content spreading. *Journal of Communication and Public Relations*, *1*(2), 54–63. https://doi.org/g4h8rv

World Health Organization (WHO). (2024, November 14). Diabetes. https://www.who.int/news-room/fact-sheets/detail/diabetes

Zhu, B., & Qu, S. (2022). The relationship between diabetes mellitus and cancers and its underlying mechanisms. *Frontiers in Endocrinology*, *13*. https://doi.org/g8ckmm