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The Role of Health Awareness in Determining Healthy Behaviors among Adolescents with Type 1 Diabetes

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Abstract:

The current study aims to investigate the role of health awareness in determining the manifestations of healthy behaviors in adolescents with Type 1 diabetes, specifically focusing on: dietary behavior, physical activity, and medication adherence. We employed a descriptive approach and applied a questionnaire tool to assess health determinants and the manifestations of healthy behaviors practiced by adolescents. The sample comprised 600 adolescents with Type 1 diabetes (250 males and 350 females) aged between 19 and 21 years.

The study posed the following question:

✓ What are the manifestations and patterns of healthy behaviors practiced by adolescents with Type 1 diabetes based on their level of health awareness?

The following results were obtained:

✓ There are differences in the manifestations of healthy behavior among adolescents with Type 1 diabetes based on their level of health awareness.

✓ Adolescents with a high level of health awareness tend to exhibit many positive healthy behaviors.

✓ Adolescents with a moderate level of health awareness engage in acceptable healthy behaviors in terms of managing the disease.

✓ Adolescents with a low level of health awareness are more likely to engage in unhealthy behaviors.

Keywords: adolescence, diabetes health awareness, healthy behavior,

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I. INTRODUCTION

Public health is considered one of the most important issues that receives wide attention from researchers, physicians, and specialists in various fields, particularly in the field of health psychology. The concept of health has evolved to be defined as a state of dynamic balance between physiological, psychological, and social resources (Horne, J. 2009).

Health-related behavior is regarded as one of the fundamental pillars of public health due to its significant role as a cornerstone of preventive medicine, health promotion, and therapeutic education. Its importance lies in its contribution to achieving health or recovering from illness, especially in terms of preventing and managing chronic diseases. These behaviors may stem from individual beliefs and gradually become automatic lifestyle patterns, which can be either beneficial or harmful. On the one hand, they may considerably reduce risk factors, while on the other, they may increase the likelihood of exposure to risks. This depends largely on the direction of the behavior and the level of perceived health awareness (Hubley, J. 1993).

Health behavior is defined as any behavior or activity that forms part of daily life but directly affects an individual's health status, whether psychological or physical. In the same context, health behaviors can constitute part of a healthy lifestyle for both individuals and communities (Publique, 2013).

Gochman also defines health behavior as the characteristics within a person reflected in beliefs, cognitive perceptions, and personality traits, including emotional and affective states, overt behavioral patterns, and habits that are associated with health maintenance and prevention, aimed at promoting and enhancing health (Maddock, J., 2002). From an operational perspective, health behaviors are expressed as a set of practiced behaviors measured through specific tools such as scales or questionnaires designed for study.

Since the present study focuses on adolescents, it is important to note that adolescence is defined as the stage between childhood and adulthood, during which adolescents face challenges such as establishing self-identity, often accompanied by problems and conflicts (Baker, 1999). This becomes particularly significant when adolescents are affected by chronic illnesses. In the context of this study, the focus is on adolescents with type 1 diabetes, which is defined as a pancreatic disorder resulting in insufficient insulin production (American Diabetes Association, 2021). This type of diabetes usually develops during childhood or adolescence and requires daily insulin injections as treatment (Atkinson et al., 2014). Individuals with type 1 diabetes are at risk of serious health complications if blood glucose levels are not well managed (Chiang et al., 2014).

Moreover, individuals with type 1 diabetes often experience marginalization and social stigma due to the necessity of injecting insulin in public and wearing glucose monitoring devices (Browne et al., 2013). This issue is especially relevant for adolescents with type 1 diabetes, who face daily challenges in managing their condition while simultaneously dealing with stigma (Browne et al., 2013). These circumstances prompted the current study to explore the role of their health awareness in determining the manifestations of their health behaviors, given that they encounter numerous challenges—most of which are psychological and cognitive conflicts—that ultimately shape their behavioral patterns.

1. Previous Studies :

Several previous studies have addressed topics related to our research theme, namely the role of health awareness in determining the manifestations of healthy behaviors among adolescents with type 1 diabetes. The most relevant studies can be summarized as follows:

Numerous studies have examined health awareness and health behaviors among adolescents, particularly in the context of chronic health challenges such as diabetes.

- **Ben Aissa, Fatima Zahra (2021)**

Title of the study: Healthy behaviors among adolescents with diabetes.

Objective of the study: This study aimed to identify the nature of healthy behaviors adopted by adolescents with type 1 diabetes, and the extent to which these behaviors are associated with acquired health awareness.

Methodology: The researcher employed the descriptive-analytical method, using semi-structured interviews conducted with a sample of ten adolescents (5 males, 5 females).

Results of the Study : The study found that most of the participants demonstrated a moderate to high level of health awareness, which was evident through their practice of healthy behaviors such as regular physical activity, proper nutrition, and adherence to routine medical check-ups. The study also emphasized the importance of family support in enhancing this awareness. The researcher recommended the integration of health education programs within educational institutions.

- **Tahir, Yasmina & Titouche, Naima (2023)**

Title: Health awareness and its relationship with risk behaviors among adolescents.

Objective of the study: This study aimed to examine the relationship between the level of health awareness and risk behaviors among adolescents, while also exploring differences according to gender.

Methodology: The researchers employed a quantitative descriptive method, using a health awareness questionnaire and a risk behavior scale. The sample consisted of 100 adolescents (34 males, 66 females).

Results of the study: The findings revealed an inverse relationship between health awareness and risk behaviors; the higher the level of health awareness, the lower the engagement in negative behaviors. The study also showed no statistically significant differences in health awareness between genders, while differences were found in risk behaviors in favor of females. The researchers recommended intensifying awareness campaigns directed at adolescents within educational institutions.

- **Ben Halima, Fatima Zahra (2022)**

Title: The level of health awareness and degree of healthy behavior among adolescents after the COVID-19 pandemic.

Objective of the study: This study examined the impact of the COVID-19 pandemic on the level of health awareness and healthy behavior among adolescents.

Methodology: The researcher employed a descriptive method and administered a questionnaire to a sample of 116 adolescents from Algiers.

Results of the study: The results indicated a significant increase in health awareness after the pandemic, particularly in relation to personal hygiene and preventive measures. The study also revealed a strong correlation between health awareness and healthy behavior, with no statistically significant differences based on gender, while differences were found according to educational level. The researcher recommended capitalizing on the acquired awareness through sustainable school-based health programs.

- **Harbouche, Soumia (2021)**

Title: Health culture and manifestations of healthy behaviors among adolescents

Objective of the study: This study aimed to identify the relationship between health culture and healthy behaviors among adolescents.

Methodology: A descriptive method was employed, with a sample of 947 adolescents (264 males, 683 females) aged between 18 and 21 years.

Results of the study: The findings revealed that adolescents with higher levels of health culture were more likely to engage in positive health behaviors such as proper nutrition and physical activity, whereas those with lower levels of health culture were more prone to negative behaviors. The researcher recommended the integration of health education into school curricula.

- **Smith, J. & Taylor, R. (2020)**

Title: Health Literacy and Diabetes Self-Management Among Adolescents.

Objective of the study: This study aimed to analyze the relationship between health literacy and adolescents' ability to self-manage type 1 diabetes.

Methodology: The researchers employed a quantitative method, administering questionnaires to a sample of 250 adolescents with type 1 diabetes.

Results of the study: The results indicated that adolescents with higher levels of health literacy demonstrated greater ability to regulate blood sugar levels, adhere to treatment, and prevent complications. The study also revealed that targeted health education had a positive impact on dietary behavior and physical activity. The researchers recommended integrating health education programs into the medical care of adolescents with diabetes.

2. Synthesis of Previous Studies:

The reviewed studies highlight that health awareness plays a pivotal role in shaping healthy behaviors among adolescents, particularly those living with chronic illnesses such as type 1 diabetes. They collectively emphasize that factors such as family support, the school environment, and educational level significantly influence the adoption of healthy behaviors. Moreover, most studies stress the importance of incorporating health education into school curricula and intensifying awareness campaigns targeted at this age group.

3. Problem Statement:

Researchers and specialists in health psychology agree that healthy behaviors have an individual dimension, and that health behavior is linked to specific health outcomes. Most studies have confirmed that healthy behaviors often show weak and non-significant correlations with one another. In other words, an individual who adopts one particular healthy behavior does not necessarily follow all other healthy practices. For instance, a person who consumes healthy meals is not necessarily someone who engages in regular physical activity. Thus, a health behavior cannot be defined by a single practice but rather as the outcome of multiple behaviors. Consequently, adopting one specific healthy behavior does not imply the automatic adoption of other health behaviors.

Moreover, healthy behaviors are not only important for disease prevention and health promotion but also represent personal habits. These are behaviors that are acquired, implemented, and eventually become habits. In this sense, a healthy habit can be defined as a health-related behavior that is deliberately established, stored in awareness, and carried out automatically without conscious thought (Jaber, 2003).

Although health psychology plays an important role in describing, explaining, and intervening in unhealthy behaviors, its scope should not be limited to therapeutic interpretations and interventions. It is equally essential to investigate the levels of health awareness in society and to identify the sociocultural perspectives surrounding the adoption—or non-adoption—of healthy behaviors and their impact on daily life patterns. Many individuals face a variety of health risk factors that contribute to both epidemic and chronic diseases. These risks are largely influenced by environmental conditions, which play a significant role in raising or lowering individuals' health awareness.

In short, health education within society plays a crucial role in fostering a revolution in health awareness, particularly in the context of prevention at its various levels. Health awareness strongly shapes beliefs and perceptions about illness and the pain associated with it (Hadly, C., 2008).

In another context, adolescence is defined by the World Health Organization as a period of growth and development extending from childhood to adulthood, ranging approximately from ages 11 to 21. It represents a critical transitional stage in life, characterized by rapid development and change. Adolescence is also described as the progression toward biological, psychological, and social maturity, marked by physical changes as well as self-development and the pursuit of independence in personality. During this stage, adolescents seek to establish social relationships with their environment, which often leads them to face challenges and conflicts specific to this developmental period.

These challenges are further compounded when the adolescent suffers from a chronic illness. In the case of the present study, the focus is on adolescents with type 1 diabetes, which is defined as a pancreatic disorder resulting in insufficient insulin production in the body (American Diabetes Association, 2021).

Most studies in the field of health psychology highlight the importance of assessing health awareness among adolescents as a determinant of their healthy behaviors. However, relatively few studies have specifically focused on adolescents with chronic illnesses, particularly type 1 diabetes. This gap in the literature has motivated the present study, which aims to contribute to both national and international research by providing a scientifically grounded reference. Accordingly, the study is guided by the following main **research question:** What are the manifestations and patterns of healthy behaviors practiced by adolescents with type 1 diabetes based on their level of health awareness?

Sub-questions:

✓ What are the manifestations of dietary behavior among adolescents with type 1 diabetes based on their level of health awareness?

✓ What are the manifestations of physical activity behavior among adolescents with type 1 diabetes based on their level of health awareness?

✓ What are the manifestations of medication adherence behavior among adolescents with type 1 diabetes based on their level of health awareness?

II. Methodology :

This research is classified among studies that adopt the descriptive methodology and is categorized within survey research. This approach is employed to study a specific phenomenon and aims to provide an accurate description of it. The descriptive survey method is one of the scientific research approaches designed to describe a phenomenon or topic as it exists in reality. In this method, the researcher collects data and information about the phenomenon using research tools such as questionnaires, interviews, and observation, then analyzes and interprets these data to draw conclusions regarding the nature, components, and characteristics of the phenomenon. This methodology is considered appropriate for studying current phenomena and providing a precise description of them without intervening in their course (Smith, 2021).

1. Study Instruments:

In survey research, several research tools are commonly used, the most prominent of which is the questionnaire, which consists of a set of questions designed to collect data and information from participants. Questionnaires are considered the most widely used tools in survey studies due to their ease of administration and the efficiency of result analysis.

In the present study, we applied a questionnaire targeting the manifestations of various health behaviors among adolescents and youth. This tool was adapted from the Adolescent Health and

Development Questionnaire, which has been employed in several studies measuring different health behaviors among adolescents (Jessor, 2002). The questionnaire was originally developed by Richard Jessor, Frances M. Costa, and Mark S. Turbin in 2002

After translating the full original questionnaire, we selected specific dimensions that serve the objectives of the current study, including: the health awareness dimension, the dietary behavior dimension, the physical activity dimension, and the treatment adherence behavior dimension.

Regarding the psychometric properties of the questionnaire, we relied on the approach of the original authors to calculate validity and reliability indices of the instrument (Adolescent Health and Development Questionnaire). We further calculated the validity of translation, reviewed the content of the questionnaire, and made adjustments based on expert feedback. In addition, we computed Cronbach's alpha reliability coefficient, which was found to be 0.68 after improving the value through the Spearman-Brown correction.

2. Study Sample:

✓ The study was conducted on a total sample of 600 adolescents diagnosed with type 1 diabetes, consisting of 250 males and 350 females.

✓ Sampling method: A cross-sectional approach was employed. In cross-sectional sampling, data are collected from a group of participants at a single point in time, allowing the researcher to analyze existing conditions, behaviors, and relationships without manipulating variables Random or purposive sampling of individuals at a single, specific point in time, as this method is commonly used in survey studies to collect data related to the objective of our research within a defined period.

✓ Their ages range between 17 and 21 years.

III. Presentation of Study Results:

The results of our study will be presented as follows:

Table 1: The table illustrates the overall findings regarding the manifestations of health behaviors (dietary behavior, physical activity, and treatment adherence) among adolescents with type 1 diabetes, in light of their level of health awareness.

Health behaviors	Among adolescents with type 1 diabetes who demonstrate a high level of health literacy	Among adolescents with type 1 diabetes who demonstrate a moderate level of health literacy	Among adolescents with type 1 diabetes who demonstrate a low level of health literacy
Dietary behavior	•Avoiding foods that contain fats: 90% •Skipping breakfast: 45% •Consuming snacks: 50% •Drinking sufficient amounts of water: 70% •Eating fresh vegetables daily: 83% •Eating fruits instead of processed sweets: 70%	•Avoiding foods that contain fats: 88% •Skipping breakfast: 50% •Consuming snacks: 61% •Drinking sufficient amounts of water: 67% •Eating fresh vegetables daily: 49% •Eating fruits instead of processed sweets: 65%	•Avoiding foods that contain fats: 30% •Skipping breakfast: 88% •Consuming snacks: 77% •Drinking sufficient amounts of water: 40% •Eating fresh vegetables daily: 58% •Eating fruits instead of processed sweets: 60%
Physical activity	•Engaging in individual exercise sessions per week: 70% •Participating in organized sports per	•Engaging in individual exercise sessions per week: 59% •Participating in organized sports per	•Engaging in individual exercise sessions per week: 30% •Participating in organized sports per

	week: 65% •Family involvement in household chores: 58% •Walking daily: 80% •Participating in group sports: 67% •Daily physical activities: 78%	week: 50% •Family involvement in household chores: 60% •Walking daily: 71% •Participating in group sports: 35% •Daily physical activities: 60%	week: 15% •Family involvement in household chores: 40% •Walking daily: 20% •Participating in group sports: 30% •Daily physical activities: 40%
Medication adherence	•I know the importance of treatment and its impact on my health: 97% • understand the complications of not adhering to treatment: 71% • visit the doctor regularly as scheduled: 95% • keep a record or tool to help me remember my medications: 60% • adhere to the recommended doses without increasing or decreasing them: 97% • make sure to take medications at the prescribed times: 88%	•I know the importance of treatment and its impact on my health: 90% • understand the complications of not adhering to treatment: 68% • visit the doctor regularly as scheduled: 88% • keep a record or tool to help me remember my medications: 45% • adhere to the recommended doses without increasing or decreasing them: 90% • make sure to take medications at the prescribed times: 63%	•I know the importance of treatment for my health: 58% • understand the complications of not adhering to treatment: 50% • visit the doctor regularly as scheduled: 48% • keep a record or tool to help me remember my medications: 12% • adhere to the recommended doses without increasing or decreasing them: 40% • make sure to take medications at the prescribed times: 18%

IV. Discussion of Study Results:

The previous results indicate that adolescents with a high level of health literacy are the most engaged in positive health behaviors. They demonstrate the highest adherence to healthy dietary practices, physical activity, and medication adherence. Moreover, they share similarities with adolescents with a moderate level of health literacy in adopting healthy dietary behaviors and physical activity, and there is also a convergence in treatment adherence.

The differences observed in the adoption of health behaviors among adolescents with varying levels of health literacy can be explained by cultural and social dimensions, as well as their beliefs regarding the concept of health and illness. Health literacy represents a system of cognitive schemas and values that manifest either explicitly or implicitly, significantly influencing beliefs, perceptions, emotions, affective responses, and attitudes toward illness. This framework helps explain and analyze the diverse manifestations of health behaviors among all adolescents, depending on their level of health literacy. Adolescents with high health literacy tend to adopt positive health behaviors across all patterns influenced by socio-cultural frameworks.

It is noteworthy that the findings, reflecting varying manifestations of health behaviors among adolescents, differ according to their level of health literacy. This conclusion aligns with explanatory models of health behavior, which are advanced scientific frameworks in psychology, particularly health psychology. These models aim to understand why individuals adopt or avoid certain health-related behaviors, such as engaging in physical activity, consuming healthy meals, or adhering to treatment, and how these behaviors can be influenced through preventive and therapeutic interventions.

Among the most widely recognized models is the Health Belief Model (HBM), which emphasizes an individual's perception of illness, perceived barriers and benefits to health, and key components such as: perceived susceptibility, perceived severity, perceived benefits of the health behavior, perceived barriers to adopting the behavior, cues to action, and self-efficacy. Another significant model is the Social Cognitive Theory (SCT), developed by psychologist Albert Bandura,

which focuses on the interaction between the individual (knowledge, beliefs), behavior (actions), and environment (supportive or inhibiting), with a strong emphasis on self-efficacy—the individual's ability to successfully execute a behavior.

When focusing on adolescence, it is considered a stage of gradual biological, psychological, and social development. During this period, individuals may face various conflicts and transformations, such as living with a chronic illness like diabetes. Consequently, adolescents practicing health behaviors may encounter more challenges than individuals in other age groups.

Nevertheless, health literacy remains crucial for engaging in health behaviors, managing the disease, and preventing its progression, regardless of age group. Based on the findings of our study, it can be concluded that Algerian adolescents with diabetes differ in their levels of health literacy, depending on their culture, habits, knowledge, and beliefs regarding the concept of health and illness.

V. CONCLUSION:

This study represents an important step in understanding the role of health literacy in shaping health behaviors among adolescents with type 1 diabetes. The primary aim was to explore how health literacy influences adolescents' choices and behaviors in their daily lives, particularly in the context of the challenges they face in managing their condition.

The study employed a descriptive methodology as the main tool for data collection. A comprehensive questionnaire was designed to examine health determinants and the health behaviors practiced by a sample of 600 adolescents, including 250 males and 350 females, aged between 17 and 21 years. This diversity in the sample reflects varied life experiences and cultural and social backgrounds, enhancing the accuracy and reliability of the findings.

The results indicate that health literacy plays a pivotal role in guiding health behaviors. Data revealed that adolescents with a high level of health literacy tend to adopt positive health practices, such as maintaining a balanced diet, engaging in regular physical activity, and adhering to treatment. These behaviors are not only essential for managing type 1 diabetes but also contribute to improving overall quality of life. Adolescents with a moderate level of health literacy demonstrated acceptable health behaviors, whereas those with low health literacy were found to be the most prone to unhealthy behaviors, increasing the likelihood of disease progression, These findings highlight the need to develop targeted intervention strategies aimed at enhancing health literacy among this population.

The findings of this study highlight the importance of therapeutic education programs targeted at adolescents and their families, as they can be effective in enhancing health literacy and providing the necessary knowledge to better manage diabetes. These programs should cover multiple aspects, such as delivering accurate information on proper nutrition, the importance of physical activity, methods of treatment adherence, and managing emotions and stress through relaxation techniques. Additionally, these programs should be grounded in scientific principles while taking into account cultural and social differences among adolescents.

In conclusion, this study emphasizes the importance of ongoing research in the areas of health literacy and health behaviors, and underscores the need for further future studies to explore additional factors that may influence adolescent behaviors. Understanding these dynamics can contribute to the development of more effective educational and health strategies that support adolescents in managing diabetes and promoting healthy lifestyle patterns.

Enhancing health literacy not only improves diabetes management but also has broader implications for public health and the promotion of healthy lifestyles among youth in general. Given the increasing challenges faced by adolescents in the contemporary era, investing in health literacy and education should be a top priority for communities, families, and health organizations

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