## Original article

# Genetic and common disease awareness, risk perception, and health behavior among the Thai population aged 15-60 in Bangkok: A study

Sujimon Mungkalarungsi*✉ , Teeridsara Laouhulaikul**, Rachata Kunakitkumjohn***, Rashida Rattanavicha****, Kridsanut Kitsanguan*****, Wish Boonmee******, Tippnant Treesirinate****
*Independent researcher
**Darunsikkhalai School for Innovative Learning
***Harrow International School
****Demonstration School of Khon Kaen University, Secondary School
*****King Mongkut's International Demonstration School
******Suankularb Wittayalai School
✉khunsujimon@gmail.com

## Abstract

Bangkok's diverse population and health challenges require a focus on genetic and common disease awareness, risk perception, and health behavior among individuals aged 15-60. Despite healthcare advancements, the city faces public health issues due to rapid urbanization and lifestyle changes, leading to chronic diseases.

To assess level of awareness, risk perception of genetic and common diseases and health promoting behavior among Thai people in Bangkok, 15-60. And to study the relationships between genetic and common disease awareness, risk perception, and health behavior. This study is a cross-sectional study, collected data by using an online survey (Google Form) during 27th Febth - 27 Mar 2024. Population was people aged 15-60 years old who live in Bangkok.

The result showed that from a total of 392 participants majority was female (72.70%), with a significant portion aged of 45-54 years old (30.36%). Majority of educational level of participants was holding Bachelor's degrees (41.58%). Their occupations were mainly students (30%). Social media was main source of health information (49.49%) of participants. Furthermore, 84.95% had never undergone genetic testing. Concerning genetic and common disease awareness, most participants showed a moderate level of awareness (44.65%), and majority of them reported a high level of risk perception (61.48%).

Statistical analysis disclosed positive correlations between genetic and common disease awareness, risk perception, and health behavior. Specifically, significant associations were found between genetic and common disease awareness and risk perception ($r=.210^{**}$, $p < 0.01$), genetic and common disease awareness and health behavior ($r=.123^{*}$, $p < 0.05$), and risk perception and health behavior ($r=.662^{**}$, $p < 0.01$). From the analysis risk perception (Beta= .656, $p < 0.01$) was factors that could predict health behavior 65.6%

Health education should emphasize that lifestyle factors often outweigh genetics in disease prevention. Accurate information should be shared widely. Healthcare providers should offer personalized advice, promoting healthy habits like good nutrition and exercise. Community initiatives and media campaigns can support these messages. Combining genetic and lifestyle information empowers informed health decisions.

**Keywords**: Genetic and common disease, awareness, risk perception

**Article info**:
Received: May 3, 2024
Revised: Jul 5, 2024
Accepted: Jul 16, 2024

## Introduction

Bangkok, the capital city of Thailand, is a microcosm of the nation's diverse population and health challenges. Within this dynamic urban landscape, understanding genetic and common disease awareness, risk perception, and health behavior among individuals aged 15-60 is crucial for addressing the unique health needs of Bangkok's residents (Iamtrakul & Chayphong, 2023; Chongsuvivatwong, et al, 2011).

Despite significant advancements in healthcare infrastructure and services, Bangkok faces pressing public health issues related to genetic and common diseases. Rapid urbanization, lifestyle changes, and environmental factors contribute to the prevalence of non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, and cancer (Department of Disease Control Thailand, 2020).

Additionally, Bangkok's population is diverse, with individuals from various socioeconomic backgrounds and cultural heritages, each facing distinct health challenges and disparities (Department of Disease Control Thailand, 2020; Chin & Tham, 2020; Niyibizi, et al, 2023; Pacific Prime Thailand., 2023).

Factors such as access to healthcare services, health literacy levels, cultural beliefs, and socioeconomic status can influence genetic and common disease awareness, risk perception, and health behavior among Bangkok's population aged 15-60. Understanding these factors within the context of Bangkok's urban environment is essential for developing targeted interventions and policies that effectively address the city's health needs (Ngamkham, et al, 2018; Boonkhayai, 2019; Jumroonjareed, et al, 2023; Thanajindawong, et al, 2023; Krungsri Research, 2020; Bangkok Dusit Medical Services, 2022).

This study holds significant implications for public health and healthcare policy in the city. By identifying gaps in knowledge and understanding of genetic and common diseases, this research can inform the development of tailored health education programs and interventions aimed at improving health literacy and promoting preventive behaviors among Bangkok residents (Meng, et al, 2023; Shiloh, et al, 2013; Tagini, et al, 2021; Ferrer & Klein, 2015).

## Objectives

1. To assess level of awareness and knowledge of genetic and common diseases, risk factors, and risk perception, and health promoting behavior among Thai people in Bangkok, 15-60.

2. To study the relationships between genetic and common disease awareness, risk perception, and health behavior.

**Research Framework** (Alsaleh, et al, 2023) (Figure 1., Figure 2)

## Study Methods

This research employed a cross-sectional approach and gathered data through an online survey conducted via Google Form from February 27th to March 27 th, 2024.

## Population and Sampling

The study population comprised individuals residing in Bangkok, Thailand, aged between 15 and 60, with internet accessibility (an infinite population). The Cocochan formula (Statistics How to, (n.d)) guided the determination of the sample size, estimated to be between 350 and 450 participants.

## Instrument

In this study, a specialized online questionnaire was purposefully created to gather data. The questionnaire was developed based on a systematic process, which involved two main steps: 1) reviewing academic materials on genetic and common diseases from reputable sources such as the WHO, CDC, and Thailand's Ministry of Health, and 2) examining previous studies on awareness of genetic and common diseases. The questionnaire comprised four sections:

1) Sociodemographic Information: This section included six questions regarding participants' gender, age, education level, occupation or field of study, sources of

genetic and common disease information, and whether they had undergone genetic testing.

2) Genetic and Common Disease Awareness: This section contained ten questions aimed at assessing participants' knowledge about genetic and common diseases. Each question provided multiple-choice options, with only one correct answer. Points were awarded accordingly, resulting in a total score ranging from 0 to 10, with interpretations provided in Table 1.

Part 3: Genetics and Common Disease Risk Perception: This section comprised nine questions designed to gauge participants' perception of genetic and common disease risks. Questions were structured using a Likert scale ranging from 1 to 5, where 5 denoted "strongly agree," 4 represented "agree," 3 indicated "neutral," 2 denoted "disagree," and 1 signified "strongly disagree." Participants' responses were totaled, resulting in a score range of 9 to 45. The interpretation of risk perception scores is detailed in Table 2.

Part 4: Health Behavior: This section consisted of twelve questions aimed at assessing participants' health behaviors. The questions utilized a Likert scale to measure the frequency of behaviors, ranging from 1 to 5, where 5 indicated "always," 4 represented "often," 3 denoted "sometimes," 2 signified "rarely," and 1 indicated "never." Participants' responses were tallied, resulting in a total score range of 12 to 60. The interpretation of health behavior scores can be found in Table 3.

## Tool Validation

The data collection tools used for this study were reviewed by scientific experts. There were 3 experts in medical science filed with IOC values of 1.0 and 1.0 and the questionnaire was tested (Try Out) to collect data with a sample group of 10 people in different areas to test the level of difficulty of the questions. There are no additional questions solved. (Mahachulalongkornrajavidyalaya University, 2015)

## Data Analysis

Descriptive statistics were employed to analyze the socio demographic data of participants, including frequencies, percentages, means, and standard deviations. Correlation analysis was conducted to examine relationships between variables, while Multiple Regression analysis was utilized to identify predictive factors.

## Protection of Participants' Rights

In conducting this survey research, ethical considerations such as informed consent and confidentiality are paramount. Prior to participation, participants must be fully informed about the study's purpose, procedures, risks, and benefits, with the opportunity to freely consent and withdraw at any time. Confidentiality measures must be rigorously upheld, ensuring that participants' responses and personal information are safeguarded from unauthorized access or disclosure. Researchers must employ secure data collection and storage methods, anonymize responses, and clearly communicate the steps taken to protect confidentiality, thereby respecting participants' autonomy, privacy, and dignity throughout the research process.

## Study results

From the total respondents of 392 people, the majority are females, accounting for 72.70%, while males account for 27.30%. The majority of respondents are aged between 45-54, accounting for 30.36%, and the majority have a Bachelor's degree, accounting for 41.58%. Regarding the sources of health-related information, the majority receive it from social media, accounting for 49.49%, while 84.95% of respondents have never undergone genetic testing (Table 4).

From the results of our research, it is concluded that the majority of the participants, 44.65% of participants, have moderate knowledge about genetic and common diseases. Moreover, 34.18% of participants have low/poor knowledge on genetic and common diseases and 21.17% of participants are highly knowledgeable regarding the topics of genetic and common diseases (Table 5).

From our research it can be seen that the majority of the participants (61.48%) have a high level of risk perception for genetic and common diseases. Furthermore, the remainder of the participants who can be

segregated into categories of low and moderate level of genetic risk perception, have the same percentage of participants: 32.14% (Table 6).

Stemming from the results of our research it is shown that 37.24% of the participants have good levels of health behavior and 47.96% and 14.80% of participants have moderate and low levels of health behavior respectively (Table 7).

The analysis of correlation coefficient of the study outcomes revealed the positive correlation and statistically significant between genetic and common disease awareness and genetic and common disease risk perception (r=.210**, p-value < 0.01), genetics and common disease awareness and health behavior (r=.123*, p-value <0.05), and genetics and common disease risk perception and health behavior (r=.662**, p-value <0.01). (Table 8)

The result from a generalized linear model revealed that genetic and common disease risk perception had statistically significant effects on health behavior (Beta= .656, *p*-value <0.01). (Table 9)

## Discussion

The analysis of data collected from 392 respondents provides valuable insights into various aspects related to genetic and common diseases among the population surveyed. The demographic profile of the participants reveals interesting trends, with a majority being female (72.70%) and a significant representation from the 45-54 age group (30.36%). An outstanding proportion of respondents have attained a Bachelor's degree (41.58%), and social media emerges as the primary source of health-related information for nearly half of the participants (49.49%). However, it's noteworthy that a considerable portion (84.95%) have never undergone genetic testing.

Regarding awareness levels, the majority of participants demonstrated moderate knowledge about genetic and common diseases (44.65%). Additionally, a substantial percentage (61.48%) displayed a high level of risk perception concerning these diseases. Statistical analysis revealed positive correlations between awareness levels, risk perception, and health behaviors. Specifically, genetic and common disease awareness correlated positively with both risk perception (r=.210**, p < 0.01) and health behavior (r=.123*, p < 0.05), while risk perception significantly predicted health behaviors (Beta= .656, p < 0.01).

Based on the survey of 392 respondents, the majority are female (72.70%) with males comprising 27.30% of the sample. The largest age group among respondents falls between 45-54 years old (30.36%), and the majority have attained a Bachelor's degree (41.58%). When it comes to obtaining health related information, social media is the primary source for the majority (49.49%), while a significant portion (84.95%) have never undergone genetic testing.

Majority of the participants, 44.65% of participants, have moderate knowledge about genetic and common diseases and 61.48% of participants have a high level of risk perception for genetic and common diseases.

There were positive correlation and statistically significant between genetic and common disease awareness and genetic and common disease risk perception (r=.210**, p-value < 0.01), genetics and common disease awareness and health behavior (r=.123*, p-value <0.05), and genetics and common disease risk perception and health behavior (r=.662**, p-value <0.01). From the analysis of the generalized linear model, it showed that the predictive factor for health behaviors was genetic and common disease risk perception, statistically significant effects on health behavior (Beta= .656, *p*-value <0.01).

Participants in the study exhibited a moderate level of awareness regarding genetics and common diseases, influenced by various factors such as educational attainment, personal experiences, and family history (Rashmi & Mohanty, 2023; Sun & Li, 2023). Notably, the majority of participants fell within the 45-60 age range, potentially contributing to their accumulated knowledge over the years or through personal experiences with genetic and common diseases such as diabetes or hypertension, prevalent among aging individuals (Rashmi & Mohanty, 2023; Sun & Li, 2023). Additionally, participants with bachelor's degrees or higher education levels displayed a heightened awareness of genetic and

common diseases, consistent with findings from Daniel Boateng's systematic review emphasizing the role of knowledge in influencing health-seeking behavior (Boateng, et al, 2017).

The source of information also played a significant role in shaping participants' knowledge levels, with nearly half obtaining information from social media platforms (49.49%). This aligns with research by Xiaojing Li and Qinliang Liu (Li & Liu, 2020), highlighting social media's effectiveness in disseminating health-related information and promoting preventive behaviors, particularly evident during the COVID-19 pandemic (Li & Liu, 2020). Despite the potential benefits of genetic testing in identifying and raising awareness of genetic disorders, only a small percentage of participants (15.05%) who underwent genetic testing reported receiving knowledge about genetic and common diseases.

These findings underscore the multifaceted nature of awareness levels regarding genetics and common diseases, influenced by factors such as age, education, and sources of information. Addressing gaps in awareness through targeted interventions and utilizing effective communication channels, including social media, can enhance public understanding and promote proactive health-seeking behaviors.

Participants exhibited a high level of risk perception. Analysis of demographic characteristics revealed that the majority of the sample had a moderate awareness of genetic and common diseases, with 55.36% of individuals aged 45-60 years, a period often associated with increased susceptibility to various illnesses (Rashmi & Mohanty, 2023; Sun & Li, 2023). Furthermore, a significant proportion of participants were pursuing or had completed undergraduate education (65.05%), indicating a potential correlation between education level and risk perception. Additionally, 15.05% of participants reported undergoing genetic testing, suggesting a heightened awareness of disease risks within the sample. Some individuals may have based their risk perception on family health history, as suggested by Yapei Song's research (Song, et al, 2013), further influencing their perception of genetic and common diseases.

The majority of participants exhibited a moderate level of health behavior, possibly due to their busy schedules as working adults and students, leaving little time for exercise and physical activity. Additionally, the advancement of technology, as noted by Aoife Stephenson (Stephenson, et al, 2017), has simplified daily tasks, potentially leading people to engage in fewer physical activities while still expecting similar health benefits. Furthermore, individuals residing in urban areas may exhibit impatience and a lack of concern for moderate health behaviors, as they may not perceive immediate consequences. This finding is consistent with research conducted by Tanaporn Jumroonjareed (Jumroonjareed, et al, 2023), Emily Thanajindawong (Thanajindawong, et al, 2023), and Siriluk Khanaroek (Khanaroek & Chanpet, 2019), all of which reported moderate levels of health behaviors among their respective study populations. Tanaporn Jumroonjareed's study focused on high school students' perceptions of non-communicable diseases and health behaviors, while Emily Thanajindawong's study explored factors influencing health behaviors among grade 10-12 students in Bangkok. Similarly, Siriluk Khanaroek's study investigated health behaviors among individuals aged 15-59 in central provinces of Thailand. These findings collectively highlight the prevalence of moderate health behaviors among various demographic groups in Thailand.

The study found a positive link between genetics and common disease awareness and risk perception. This connection aligns with the Knowledge, Attitude, and Practice (KAP) Theory, a foundational framework in healthcare behavior change. Participants' attitudes and perceptions influence their willingness to adopt health behaviors. Additionally, risk perception regarding genetics and common diseases can predict health behaviors (Beta= .656, $p < 0.01$), as supported by Fatemah M. Alsaleh's research (Alsaleh, et al, 2023). This aligns with the findings of Rebecca Ferrer et al. (Ferrer & Klein, 2015), underscoring the significance of risk perceptions in health behavior theories.

## Conclusion

From a of 392 participants, majority was female (72.70%), with a significant portion aged of 45-54 years old (30.36%). Majority of educational level of participants was holding Bachelor's degrees (41.58%). Their occupation were mainly students (30%). Social media was main source of health information (49.49%) of participants. Furthermore, 84.95% had never undergone genetic testing. Concerning genetic and common disease awareness, most participants showed a moderate level of awareness (44.65%), and majority of them reported a high level of risk perception (61.48%).

Statistical analysis disclosed positive correlations between genetic and common disease awareness, risk perception, and health behavior. Specifically, significant associations were found between genetic and common disease awareness and risk perception ($r=.210^{**}$, $p<0.01$), genetic and common disease awareness and health behavior ($r=.123^{*}$, $p < 0.05$), and risk perception and health behavior ($r=.662^{**}$, $p < 0.01$). From the analysis risk perception (Beta= .656, $p < 0.01$) was factors that could predict health behavior 65.6%

## Recommendation

Health education programs should highlight that lifestyle factors often impact disease prevention and management more than genetics. Accurate information should be shared through multiple channels. Healthcare providers should engage patients with personalized advice, promoting healthy habits like good nutrition, exercise, and avoiding smoking. Community initiatives and media campaigns can reinforce these messages. Combining information on genetic and lifestyle factors will empower people to make informed health decisions.

## References


Alsaleh, F.M., Elzain, M., Alsairafi, Z.K., Naser, A.Y. (2023). Perceived Knowledge, Attitude, and Practices (KAP) and Fear toward COVID-19 among Patients with Diabetes Attending Primary Healthcare Centers in Kuwait. **Int J Environ Res Public Health**, 20(3), 2369.

Bangkok Dusit Medical Services (BDMS). (2022). **CLSA Thailand Healthcare Access Day 2022**. cited 2024 Mar 3. from https://bdms.listedcompany.com/misc/PRESN/20220718-bdms-CLSA-thailand-healthcare-access-day-2022.pdf

Boateng, D., Wekesah, F., Browne, J.L., Agyemang, C., Agyei-Baffour, P., Aikins, A.D., et al. (2017). Knowledge and awareness of and perception towards cardiovascular disease risk in sub-Saharan Africa: **A systematic review. PLoS ONE**. 12(12), e0189264

Boonkhayai, S. (2019). The study of factors that correlate with Health literacy of Thai age 15 years old and above case study in Health Area 4. Saraburi; **Health Center 4 Saraburi Department of Health**.

Chin, J.J., Tham, H.W. (2020). Knowledge, Awareness, and Perception of Genetic Testing for Hereditary Disorders Among Malaysians in Klang Valley. **Front Genet**., 11, 512582.

Chongsuvivatwong, V., Phua, K.H., Yap, M.T., Pocock, N.S., Hashim, J.H., Chhem, R., et al. (2011). Health and health-care systems in southeast Asia: **diversity and transitions. Lancet**, 377(9763), 429-437.

Department of Disease Control Thailand. (2020). Report on the NCDs disease situation: diabetes, **high blood pressure and related risk factors 2019**. cite 2024 Feb 18. from http://www.thaincd.com/document/file/download/knowledge/รายงานสถานการณ์โรค NCDs63update.pdf

Ferrer, R., & Klein, W. M. (2015). Risk perceptions and health behavior. **Current opinion in psychology**, 5, 85–89.

Iamtrakul, P., Chayphong, S. (2023). Factors affecting the development of a healthy city in Suburban areas, Thailand. **Journal of Urban Management**, 12(3), 208-220.

Jumroonjareed, T., Attavoranan, O., Dhamapong, P., Chalermthiralert, P., Chaiprasopwong, R., Youjaiyen, P., et al. (2023). Perception of Non-Communicable Diseases and Health Behavior among high school students: Case Study. **Academic Journal of Community Public Health**, 9(1), 100-112.

Khanaroek, S., Chanpet, U. (2019). Health behavior of the working age population aged 15-59 Years in Health Regional 5 Area, 2020. **CHOPHAYOM JOURNAL**, 30(1), 153-163

Krungsri Research. (2020). Industry Outlook 2020-2022: Private Hospital [Internet]. Bangkok: **Bank of Ayudhya Public Company Limited**. cited 2024 Mar 3. from https://www.krungsri.com/en/research/industry/industry-outlook/services/private-hospitals/io/io-private-hospitals

Li X, Liu Q. (2020). Social Media Use, eHealth Literacy, Disease Knowledge, and Preventive Behaviors in the COVID-19 Pandemic: Cross-Sectional Study on Chinese Netizens. **J Med Internet Res**., 22(10), e19684

Mahachulalongkornrajavidyalaya University. (2015). **Index of item objective congruence (IOS)**. cited 2024 Mar 12. from: https://www.mcu.ac.th/article/detail/14329

Meng, G., Li, Q., Yuan, X., Zheng, Y., Hu, K., Dai, B., Liu, X. (2023). The roles of risk perception, negative emotions and perceived efficacy in the association between COVID-19 infection cues and preventive behaviors: a moderated mediation model. **BMC Public Health**, 23(1), 109.

Ngamkham, S., Suwannapong, N., Tipayamongkholgul, M., Manmee, J. (2018). Access to Health Care Services of the Elderly, Thawiwatthana District, Bangkok. **Kuakarun Journal of Nursing**, 25(2), 91-104

Niyibizi, J.B., Rutayisire, E., Mochama, M., Habtu, M., Nzeyimana, Z., Seifu, D. (2023). Awareness, attitudes towards genetic diseases and acceptability of genetic interventions among pregnant women in Burera district, **Rwanda. BMC Public Health**., 23(1), 1961.

Pacific Prime Thailand. (2023). **The Challenges of Thailand's Public Healthcare System**. cited 2024 Feb 22. from https://www.pacificprime.co.th/blog/the-challenges-of-thailands-public-healthcare-system/

Rashmi, R., Mohanty, K.S. (2023). Examining chronic disease onset across varying age groups of Indian adults using competing risk analysis. **Sci Rep**., 13(1), 5848

Shiloh, S., Wade, C.H., Roberts, J.S., Alford, S.H., Biesecker, B.B. (2013). Associations between risk perceptions and worry about common diseases: a between- and within-subjects examination. **Psychol Health**., 28(4), 434-449.

Song, Y., Ma, W., Yi, X., Wang, S., Sun, X., Tian, J., et al. (2013). Chronic Diseases Knowledge and Related Factors among the Elderly in Jinan, **China. PLoS ONE**., 8(6), e68599

Statistics How to. (n.d). Sample Size in Statistics (How to Find it): Excel, **Cochran's Formula, General Tips. cited 2024 Mar 10**. from https://www.statisticshowto.com/probability-and-statistics/find-sample-size/

Stephenson, A., McDonough, S.M., Murphy, M.H., Nugent, C.D., Mair, J.L. (2017). Using computer, mobile and wearable technology enhanced interventions to reduce sedentary behavior: a systematic review and meta-analysis. **Int J Behav Nutr Phys Act**., 14(1), 105

Sun, X., Li, S. (2023). Editorial: Aging and chronic disease: public health challenge and education reform. **Front Public Health**, 11, 1175898

Tagini, S., Brugnera, A., Ferrucci, R., Mazzocco, K., Compare, A., Silani, V., et al. (2021). It won't happen to me! Psychosocial factors influencing risk perception for respiratory infectious diseases: A scoping review. **Appl Psychol Health Well Being**, 13(4), 835-852.

Thanajindawong, E., Kamonkularjarn, N., Juisakul, K., Sathin, A., Narintarangkool, P., Lohasiriwat, P., et al. (2023). Factors influencing health behavior among grade 10-12 students in Bangkok. **UBRU Journal for public health research**, 12(2), 79-91.

**Table 1** Interpretation of Level of genetic and common disease awareness

| Percentage | Score | Level of genetic and common disease awareness |
|---|---|---|
| 80-100 | 8-10 | Good |
| 60-79 | 6-7 | Moderate |
| <60 | <6 | Low |

**Table 2** Interpretation of Level of genetic and common disease risk perception

| Percentage | Score | Level of genetic and common disease risk perception |
|---|---|---|
| 80-100 | 36-45 | High |
| 60-79 | 27-35 | Moderate |
| <60 | <35 | Low |

**Table 3** Interpretation of Level health behavior

| Percentage | Score | Level of health behavior |
|---|---|---|
| 80-100 | 48-60 | Good |
| 60-79 | 36-47 | Moderate |
| <60 | <47 | Low |

**Table 4** Socio Demographic characteristic of participants (n=392)

| Variable | n (%) |
|---|---|
| Gender | |
| Male | 107 (27.30) |
| Female | 285 (72.70) |
| Age | |
| 15-24 | 66 (16.83) |
| 25-34 | 64 (16.33) |
| 35-44 | 45 (11.48) |
| 45-54 | 119 (30.36) |
| 55-60 | 98 (25.00) |
| Education Attainment | |
| High school | 136 (35.46) |
| Bachelor degree | 163 (41.58) |
| Master degree or above | 92 (23.47) |
| Source of information about genetic and common disease | |
| Healthcare professional | 103 (26.27) |
| Scientific journal | 13 (3.32) |
| News media | 30 (7.65) |
| Social media | 194 (49.49) |
| Friend / family | 23 (5.87) |
| None/I don't seek information on this topic | 29 (7.40) |
| Had a genetic test | |
| Yes | 59(15.05) |
| No | 333 (84.95) |
| Total | 392 (100.00) |

**Table 5** Level of knowledge about genetics and common diseases among participants (n=392)

| Score | n (%) | Level of genetic and common disease knowledge |
|---|---|---|
| 8-10 (80-100%) | 83 (21.17) | Good |
| 6-7 (60-79%) | 175 (44.65) | Moderate |
| <6 (0-59%) | 134 (34.18) | Low |

**Table 6** Level of Genetics and common disease risk perception among participants (n=392)

| Score | n (%) | Level of genetic and common disease risk perception |
|---|---|---|
| 36-45 (80-100%) | 241 (61.48) | High |
| 27-35 (60-79%) | 126 (32.14) | Moderate |
| <35 (0-59%) | 126 (32.14) | Low |

**Table 7** Health behavior among participants (n=392)

| Score | n (%) | Level of health behavior |
|---|---|---|
| 48-60 (80-100%) | 146 (37.24) | Good |
| 36-47 (60-79%) | 188 (47.96) | Moderate |
| <36 (0-59%) | 58 (14.80) | Low |

**Table 8** Pearson's correlation coefficient between the study outcomes

| Variable | Genetics and common disease awareness | Genetics and common disease risk perception | Health behavior |
|---|---|---|---|
| Genetics and common disease awareness | 1 | .210** | .123* |
| Genetics and common disease risk perception | .210** | 1 | .662** |
| Health behavior | .123* | .662** | 1 |

**Correlation is significant at 0.01

*Correlation is significant at 0.05

**Table 9** A generalized linear model predicting health behavior regarding genetic and common disease

| Variable | B | Std. Error | Beta | t | Sig. |
|---|---|---|---|---|---|
| Gender | -.836 | .909 | -.037 | -.919 | .358 |
| Age | .554 | .287 | .078 | 1.929 | .054 |
| Education Attainment | .265 | .562 | .020 | .471 | .638 |
| Occupation / study field | .089 | .159 | .024 | .556 | .578 |
| Genetic and Common disease news source | -.314 | .260 | -.048 | -1.206 | .228 |
| Had Genetic Test | 1.385 | 1.136 | .049 | 1.220 | .223 |
| Genetic and Common disease awareness | -.024 | .240 | -.004 | -.098 | .922 |
| Genetic and common disease risk perception | .888 | .056 | .656 | 15.801 | .000 |

a. Dependent Variable: behavior


**Figure** 1 KAP Theory

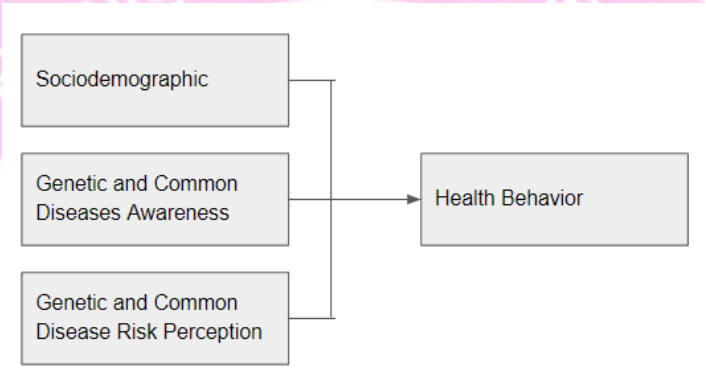


**Figure 2** Concept Framework