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Four decades of Research in Health Behavior: A Bibliometric Analysis of the Theory of Planned Behavior and the Health Belief Model

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Abstract

Given their interest in health behavior, researchers increasingly use theoretical models as guides for decision-making. The Theory of Planned Behavior (TPB) and the Health Belief Model (HBM) are among the most widely applied frameworks in predicting behaviors such as smoking and food consumption. This study conducted a bibliometric analysis of 804 studies on TPB and HBM, indexed in Web of Science and Scopus, published between 1982 and 2025. VOSviewer software enabled co-authorship, co-citation, keyword co-occurrence, and bibliographic coupling. Findings showed a rising trend of publications in TPB and HBM with dominance from developed countries. The underrepresentation of low- and middle-income countries indicates a global research gap and calls for increased collaboration and inclusivity in health behavior.

Keywords: Theory of planned behavior, Health belief model, health behavior, bibliometric analysis, VOSviewer

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Sağlık Davranışında Kırk Yıllık Araştırma: Planlanmış Davranış Teorisi ve Sağlık İnanç Modeli'nin Bibliyometrik Analizi

Öz

Sağlık davranışına olan ilgiyle birlikte araştırmacılar karar verme sürecinde rehber olarak giderek artan bir şekilde teorik modelleri kullanmaktadır. Planlı Davranış Teorisi (TPB) ve Sağlık İnanç Modeli (HBM), sigara içme ve gıda tüketimi gibi davranışları tahmin etmede en yaygın uygulanan çerçeveler arasındadır. Bu çalışma, Web of Science ve Scopus'ta indekslenen ve 1982 ile 2025 yılları arasında yayınlanan TPB ve HBM üzerine 804 çalışmanın bibliyometrik analizini gerçekleştirmiştir. VOSviewer yazılımı eş yazarlık, eş atıf, anahtar kelime eş oluşumu ve bibliyografik eşleştirmeyi mümkün kılmıştır. Bulgular, TPB ve HBM'de gelişmiş ülkelerden gelen baskınlıkla artan bir yayın eğilimi olduğunu göstermiştir. Düşük ve orta gelirli ülkelerin yetersiz temsili, küresel bir araştırma boşluğuna işaret etmekte ve sağlık davranışında artan iş birliği ve kapsayıcılık gerektirmektedir.

Anahtar kelimeler: Planlanmış davranış teorisi, Sağlık inanç modeli, sağlık davranışı, bibliyometrik Analiz, VOS görüntüleyici

Introduction

Health is one of the strongest agendas on the list of sustainable developmental goals (SDGs) of the United Nations. Globally, the world faces several health challenges, including obesity, COVID-19, infectious diseases, child malnutrition, anaemia, and so forth. The effective way to mitigate such serious health challenges is by studying people's motivation to engage in risky behaviors. The World Health Organization (WHO) has warned countries about consuming unhealthy products. In its report, it found that obesity rates among children were highest in the United States. The report suggested increasing vegetable and fruit consumption to reduce obesity (WHO, 2023). Although there have been substantial setbacks in health systems worldwide, improvements have been noted. These include advancements in medical science, such as the production of antibiotics to address both communicable and non-communicable dis-

eases, improved sanitation, and effective hygiene campaigns like “hand-wash, “ as well as mass vaccination campaigns to prevent measles and eradicate smallpox.

Research suggests that Europe and the USA host the most advanced high-standard health practices (Glatzer, 2006; Gostin et al., 2009; Raghupathi & Raghupathi, 2020). In contrast, studies on unhealthy behaviors in African countries have mirrored the phenomenon of families giving less attention to basic health practices. An unbalanced diet, negligence in physical exercise, and high levels of illiteracy compound the causes of poor health in Africa. Health research serves as a foundational element for enhancing health systems globally. It has empowered practitioners to address health challenges effectively. The Theory of Planned Behavior (TPB) and the Health Belief Model (HBM) are among the most examined theories in this field.

TPB is a widely tested social cognitive model used to predict human behavior and intention, developed by Ajzen (1987; 1991; 2011; 2012) as an extension of the Theory of Reasoned Action (TRA) (Fishbein, 1976; Ajzen & Fishbein, 1977; Ajzen & Fishbein, 2010) to address the question of volitional control. According to the theory, a person has total control when there are no constraints on a behavior. Conversely, if someone needs resources, opportunities, and skills that they do not possess to acquire a behavior, they are considered to lack control. While attitudes and subjective norms are strong predictors of actual behavior in the Theory of Reasoned Action (TRA), incorporating perceived behavioral control improves accuracy of behavior predictions. In essence, attitudes are a person’s positive and negative evaluations regarding behaviors and outcomes. Subjective norms (SN) indicate how an individual perceives the influence of significant others and their willingness to follow normative beliefs. Perceived behavioral control measures how easy or difficult it is to engage in a behavior (Madden et al., 1992; Ajzen, 1991; Ajzen & Fishbein, 2010; Barbera & Ajzen, 2020). Depending on the time and environment, the four factors affect behaviors in various contexts.

HBM emerged at a time when the screening and prevention of asymp-

tomatic diseases were not widely accepted. Rosenstock (1974) observed that individuals were reluctant to adopt preventive measures despite the availability of very low-cost lab tests and sometimes free clinic check-ups. The theory's primary objective was to understand why and under what conditions people acted to prevent and detect diseases, as noted by Rosenstock (2005). HBM predicts health behavior through six constructs: perceived susceptibility, perceived severity, perceived barriers, perceived benefits, cues to action, and self-efficacy (Rosenstock, 1966; Rosenstock, 1974). Researchers have applied this theory to study communication campaigns (Griffin et al., 1999), the coronavirus (Bae & Chang, 2021; Guidry et al., 2021), smoking (Hutchinson et al., 2019; Norman et al., 1999), adolescent decision-making (Reyna & Farley, 2006), fitness and physical activity (Courneya, 1995; Cowan et al., 2013; Kim & Park, 2012), and predicting food consumption (Armitage & Conner, 1999a).

Research by Champion & Skinner (2008), Jones et al. (2015), Skinner et al. (2015), and Rosenstock (1974), along with a meta-analysis by Carpenter (2010), shows that the model is significant for predicting human behavior. However, critics argue that the HBM fails to clearly define the order of its variables. The theory's effectiveness wanes when variables are sequenced but lack proper organization. Furthermore, detractors note that the model does not account for avoidance behavior. For instance, a person who views their health as poor might refrain from taking preventive actions against diseases (Rosenstock, 1974; Rosenstock, 2005). These inherent gaps in research are typically identified through literature reviews, which help researchers identify areas requiring prompt attention. Despite the extensive application of the TPB and the HBM in explaining a wide range of health behaviors, existing research on the relationship between the two models remains unclear.

Until recently, prior studies in health fields have applied the two frameworks separately, creating a significant gap in understanding their influence on providing interventions and guidance to policymakers. Conducting a bibliometric analysis is thus important to systematically map the structural development, thematic patterns, and collaborative net-

works of TPB and HBM-based research over time. By identifying key authors, institutions, and emerging research topics, our study provides an understanding of how the two models have advanced health literature. Furthermore, our study contributes to theoretical integration and practical guidance, enabling researchers and practitioners to identify future research approaches and strengthen evidence-based health interventions. In line with the objectives of previous bibliometric studies, this study has three specific objectives: 1) To identify emerging research themes and trends, leading authors, and the top journals publishing TPB and HBM-based studies; 2) map co-authorship, co-occurring keywords, and citation network data to identify thematic relationships; and 3) analyze the intellectual and conceptual structure of TPB and HBM based studies across health contexts.

Research method

Bibliometric analysis helps researchers who aim to comprehend the evolution of a particular field of research map its intellectual structure (Öztürk et al., 2024). It visualizes the structure of fields by grouping elements like articles, authors, journals, citations, keywords, and subtopics (Zupic & Cater 2015). There are often two basic stages in bibliometric research: 1) identification of the relevant literature (data collection) and 2) bibliometric analysis of the acquired data. (see Figure 1) The initial search process includes identifying search terms that accurately represent the relevant literature and the databases to be searched. To identify the most convenient articles, we employed a repeatable and transparent approach (Trandfield et al., 2003; Islek and Kocaman, 2024) to evaluate the available evidence, thereby reducing bias arising from the arbitrary inclusion or exclusion of papers in the literature review process (Linnenluecke et al., 2020). The second stage includes procedures for analysing the acquired dataset: performance analysis and science mapping. The former refers to the overview of the research subject based on the scientific outputs (e.g., publication years, authors, articles, journals, and countries). The latter represents the relationships among authors, citations, and concepts (Öztürk et al., 2024).

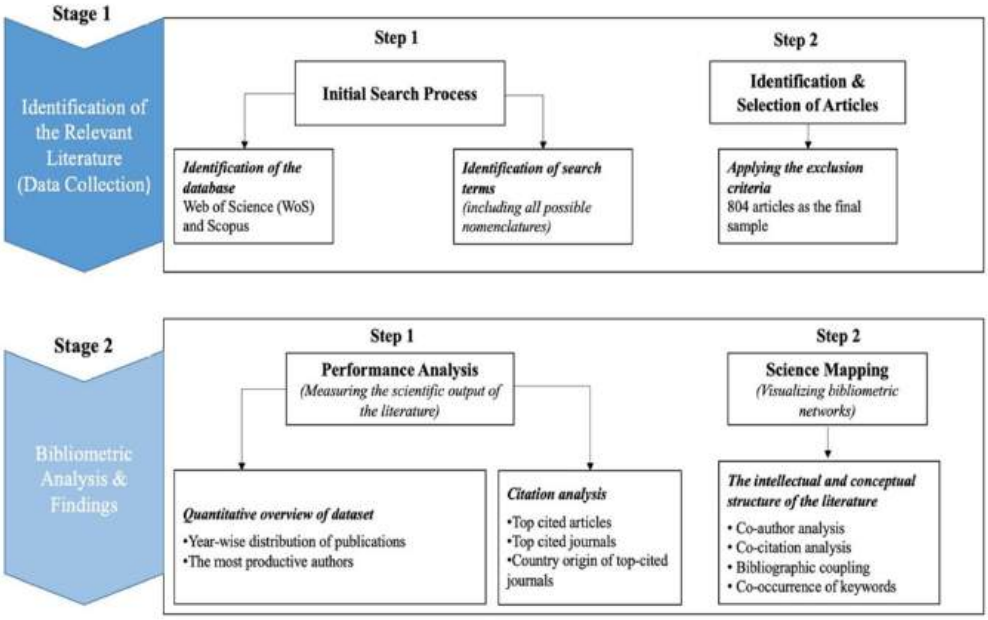

Figure 1. Research procedure

Initial Search Process

As illustrated in Figure 1, data for the bibliometric analysis may be derived from various databases (e.g., Web of Science, Scopus, EBSCO, ScienceDirect, and Google Scholar). We preferred to derive data from WoS and Scopus, because they host highly reputed peer-reviewed literature in the social sciences. These databases comprise multidisciplinary journals and have been reliable sources extensively utilized in review studies (Öztürk et al., 2024). These databases were selected because (1) they cover a wider range of subject areas and categories, which ensures more representativeness than other databases that index fewer journals owing to their stringent standards (Manyaga, 2023) and (2) they perform better than other databases in eliminating articles from predatory journals (Paul et al., 2021). We identified the terms ("health behavior", "health belief model", "HBM", and "theory of planned action", "TPA") that should be employed for the initial search. We conducted a "topical

query" encompassing all potential nomenclatures to ensure that all publications accurately and thoroughly reflect the focused research subject. This effort reached 1558 articles for the relevant search terms included in titles, abstracts, or keywords.

Selection of Articles

Our initial search yielded 1558 publications. We automatically excluded others by selecting papers published within a specific year range or publications of a specific document type. Accordingly, we excluded 115 papers that were not peer-reviewed articles. Proceeding papers were also excluded since they represent knowledge that continues to be produced and may overlap or duplicate when turned into articles (Linnenluecke et al., 2020; Kocaman and Coşgun, 2024). Additionally, book chapters, books, and other publications (e.g., book reviews and editorial materials) were excluded because they were not subject to the peer-review process of academic journals. Moreover, the analysis was limited to English-language literature publications following the recommendation of Paul and Criado (2020). Also, English is the predominant language of academic research and is used to exert greater influence on scientific research. For that reason, we removed 21 papers written in languages other than English. Study fields were limited to healthcare science services, health policy services, public health, occupational health, psychology, business and management, and social sciences, interdisciplinary to ensure that the selection criteria met the objectives of the study subject. Accordingly, we excluded 135 papers from different fields from the review process. We also identified and excluded 432 duplicated papers in both databases. Researchers must manually review the previews (title, abstract, and keywords) of the remaining articles to exclude those that arise from incorrect matches after automatic filtering (Sauer and Seuring, 2023; Kocaman et al., 2025). Accordingly, we read the titles, keywords, and abstracts of all remaining papers and assessed their relevance to the subject of study. Then, we decided to exclude 51 papers unrelated to the study subject from the review. The final population comprised 804 peer-reviewed journal articles deemed to make crucial contributions to

the research on the study subject. Figure 2 displays the procedure developed using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (http://prisma-statement.org/).

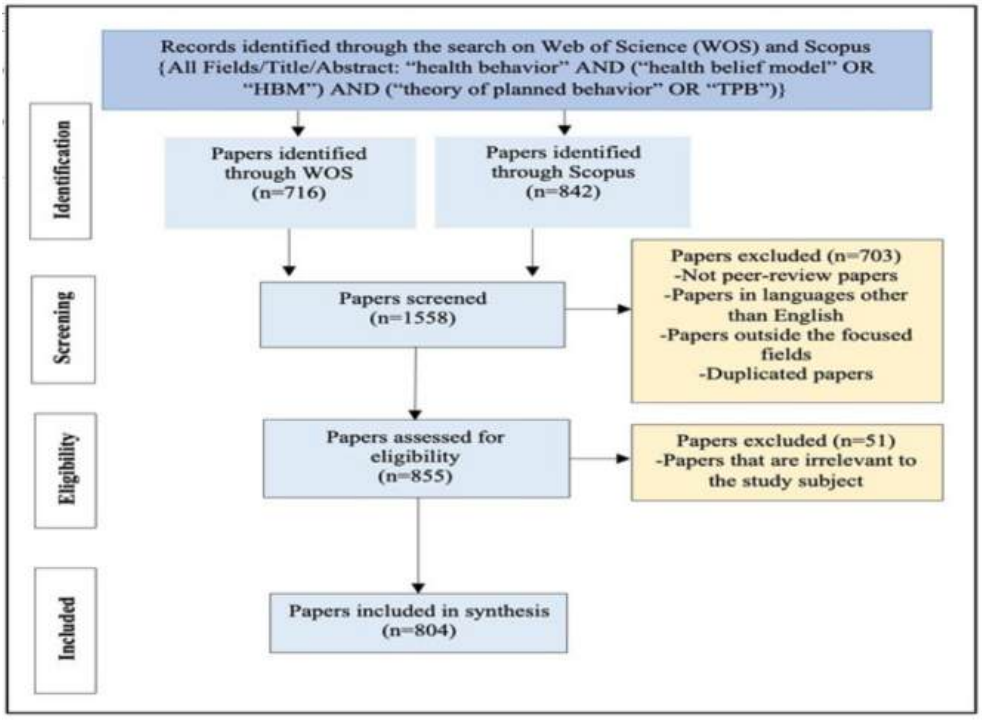

Figure 2. PRISMA flow diagram for information search

Bibliometric Analysis and Findings

Bibliometric analysis maps the intellectual structure of any field of research, subject, or publication based on specific indicators (Cobo et al., 2011). It enables the presentation of the research field's developments, the identification of research clusters that guide the field, a systematic and comprehensive picture of the field's de facto structuring, and the big picture of the words or subtopics and their relationships (Cater and Zupic, 2015). Accordingly, bibliometric analysis divides items (articles, authors, journals, keywords, or sub-topics) into several groups to visual-

ize the structure of the study subject (Ariaa and Cuccurullo, 2017). The current study employs bibliometric analysis in two steps to present an overview of the study subject. In the first step, we conducted a performance analysis to measure the scientific output of the literature, including the dataset's quantitative output and citation analysis. In the second step, we utilized science mapping to visualize bibliometric networks, including co-author analysis, co-citation analysis, bibliographic coupling, and co-occurrence of keywords.

Findings of Performance Analysis

Performance analysis provides a broad overview of the research subject by assessing the performances of multiple scientific items using various bibliometric indicators (Cobo et al., 2011), aiming to evaluate the "publication" and "citation" performances of authors, institutions, countries, and publication outlets (Öztürk and Dil, 2022). Accordingly, we classified the relevant items and compared their outputs with one another. Then, we displayed the results through a range of tables.

Quantitative Overview of the Dataset

This section describes the distribution of publications across years and the most productive authors.

Year-wise distribution of publications

Figure 3 shows the number of annual publications in the field of health. It is key to note that one of the first studies on health behavior was conducted by Levine et al., (1982) and published in the Journal of Public Health Reports.

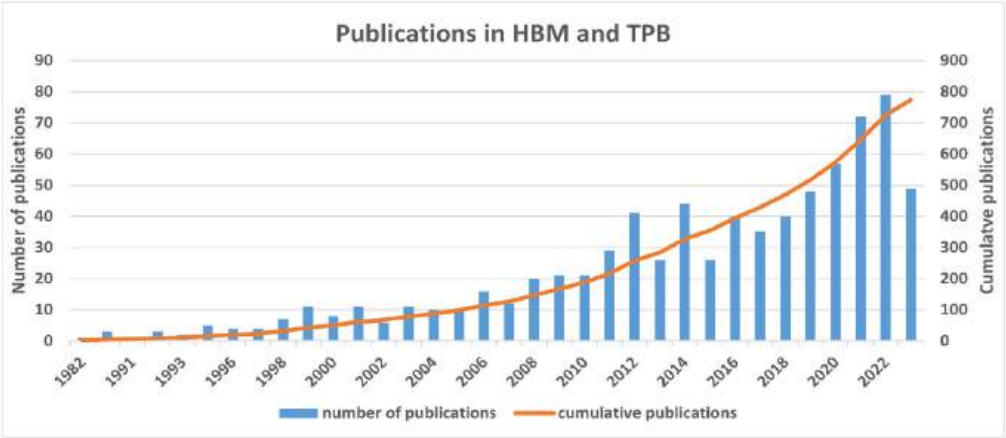

Figure 3. Year wise publication of articles in TPB and HBM

From 1982 to 1996, the number of publications increased gradually, indicating a growing but modest interest in the topic. A noticeable jump occurred around 1998, where the number of publications significantly increased, marking the beginning of a more rapid expansion in academic attention. This growth trend continued steadily through the early 2000s and gained more momentum after 2010. Between 2010 and 2024, the number of publications consistently rose, peaking in 2024 at just over 90 publications—the highest recorded in the graph. Interestingly, a sharp decline is observed in 2025. However, it is important to note that the year is not yet complete, and full data for 2025 may not be available at the time of analysis. This likely accounts for the steep drop rather than a true decline in scholarly interest. Crucially, the presence of publications in 2025—even if currently fewer—demonstrates that the subject continues to be actively studied, underscoring ongoing academic interest in TPB and HBM. Additionally, HBM and TPB are well-represented in the USA and the United Kingdom (UK), as both countries invest heavily in scientific research. The need to control and prevent threatening diseases as well as dangerous unhealthy behaviors are some of the reasons for the big budget support for health research in these countries.

The most productive authors.

The most productive authors exhaust a field by publishing several articles and contributing to the relevant research field. Prolific authors can be valuable due to their extensive knowledge, which can inform policy formulation and assist researchers within a research field. Regarding selection criteria, only authors who published more than five articles were fit for analysis. Among all authors contributing to the literature on HBM and TPB, it is interesting to note that Johnston M. (TP=11), Godin G. (TP=10), and Hagger M.S (TP=9) emerged as the most influential authors.

Table 1: Most productive authors

Author	Publications	h index	Institute	Country
Johnston, M.	11	105	University of Aberdeen	United Kingdom
Godin, G.	10	104	Université Laval	Canada
Hagger, M.S.	9	104	University of California	United States of America
Conner, M.	8	121	University of Leeds	United Kingdom
Hamilton, K.	8	46	Griffith University	Australia
Sniehotta, F.F.	7	73	Heidelberg University	Germany
White, K.M.	7	70	Queensland University of Technology	Australia
Rhodes, R.E.	6	93	University of Victoria	Canada
Blanchard, C.M.	5	34	Charles Sturt University	Australia
Eccles, M.P.	5	104	Newcastle University	United Kingdom

Table 1 suggests that prolific authors published their research from the UK, Canada, and the USA. Findings affirm that most authors are affiliated with the University of Aberdeen, Université Laval, and the University of California, respectively. It should be noted that no prolific author originates from the African continent. This is due to insufficient research institutions and funds to finance scientific research. Results also suggest that researchers based in Europe, the USA, and Canada invest more time conducting health research than their counterparts in other countries.

Citation Analysis

This section describes the most cited articles and journals and their country of origin.

Top-cited articles.

The previous analysis outlined the most influential authors based on their publication counts. It is essential to highlight the most cited articles within the realms of HBM and TPB in health. Thus, a paper's impact is gauged by its citation frequency (Donthu et al., 2021). A threshold of 200 citations was established for articles to qualify as top-cited publications. Table 2 displays the 15 most cited articles published in respected peer-reviewed journals, based on citation totals from 1982 to 2025. The most cited article, by Francis et al. (2010), discusses operationalizing data saturation in theory-based interview studies. This cross-sectional study garnered 1493 citations, marking it as the top performer. It was developed to tackle issues related to sample size. The authors proposed guidelines for achieving saturation in theory-based interview studies. Reyna & Farley (2006) and Griffin et al. (1999) authored the second and third articles, both promoting community wellness. Reyna and Farley (2006) categorized models related to risky decision-making. They differentiated between models that incorporate the TPB and the HBM, as both focus on rational actions and highlight automatic responses to perceived prototypes in the decision-making context. Furthermore, the authors indicated that effective interventions to reduce risky decision-making should consider normative, descriptive, and prescriptive concepts. Griffin et al., (1999) concluded that understanding the factors influencing behavior adoption in health campaigns is crucial.

Table 2: The top 15 articles based on citations in the research period

No	Authors	Title	Design/Approach	Theory*	Citation
1	(Francis et al., 2010)	What is an adequate sample size? Operationalising data saturation for theory-based interview studies	Cross sectional study	TPB	1493
2	(Reyna & Farley, 2006)	Risk and Rationality in Adolescent Decision Making: Implications for Theory, Practice, and Public Policy	Literature review	TPB & HBM	888
3	(Griffin et al., 1999)	Proposed Model of the Relationship of Risk Information Seeking and Processing to the Development of Preventive Behaviors	Literature review	TPB	714
4	(Armitage & Conner, 1999a)	Distinguishing Perceptions of Control From Self-Efficacy: Predicting Consumption of a Low-Fat Diet Using the Theory of Planned Behavior	Cross sectional study	TPB	410
5	(Bae & Chang, 2021)	The effect of coronavirus disease-19 (COVID-19) risk perception on behavioural intention towards 'untact' tourism in South Korea during the first wave of the pandemic (March 2020)	Cross sectional study	TPB & HBM	349
6	(Norman et al., 1999)	The theory of planned behavior and smoking cessation.	Case study	TPB & HBM	278
7	(Guidry et al., 2021)	Willingness to get the COVID-19 vaccine with and without emergency use authorization	Survey	TPB & HBM	275
8	(Ogden, 2003)	Some problems with social cognition models: A pragmatic and conceptual analysis.	Conceptual Analysis	MIXED	274
9	(Gerend & Shepherd, 2012)	Predicting Human Papillomavirus Vaccine Uptake in Young Adult Women: Comparing the Health Belief Model and Theory of Planned Behavior	Survey	TPB & HBM	271
10	(J. Kim & Park, 2012)	Development of a Health Information Technology Acceptance Model Using Consumers' Health Behavior Intention	cross-sectional descriptive correlational design	MIXED	264

11	(Moody et al., 2018)	Toward a Unified Model of Information Security Policy Compliance	Survey	MIXED	261
12	(Whitby et al., 2006)	Why Healthcare Workers Don't Wash Their Hands: A Behavioral Explanation	Literature review	MIXED	248
13	(Courneya, 1995)	Understanding readiness for regular physical activity in older individuals: An application of the theory of planned behavior.	Cross-sectional design	TPB	214
14	(Kretzer & Larson, 1998)	Behavioral interventions to improve infection control practices	Literature review	MIXED	206
15	(Cowan et al., 2013)	Apps of Steel: Are Exercise Apps Providing Consumers With Realistic Expectations?: A Content Analysis of Exercise Apps for Presence of Behavior Change Theory	Content Analysis	HBM	204

*TPB: Theory of Planned Behavior; HBM: Health Belief Model

Most cited journals and their country of origin

Researchers from the USA rank first with 9390 citations. The UK followed it with 7534 total citations as well as Canada with 3612 citations (see Table 3).

Table 3: Most cited countries and journals

No	Country	Total Citations	Journals	Total Citations
1	USA	9390	Psychology and Health	2357
2	UK	7534	Health Psychology	1263
3	Canada	3612	Psychological Science in the Public Interest	888
4	Australia	2247	Journal of Applied Social Psychology	750
5	Netherlands	1050	Environmental Research	714
6	South Korea	894	BMC Public Health	619
7	Finland	843	Preventive Medicine	554
8	China	744	British Journal of Health Psychology	528
9	Iran	587	American Journal of Infection Control	481
10	Taiwan	505	Journal of Nutrition Education and Behavior	467

Country citation analysis identifies the USA as the country with the most publications in health research publications, with researchers applying the TPB and HBM theoretical models. Notably, Asian nations like China, Taiwan, and South Korea also rank highly, showcasing the growth of behavioral research in these regions. Regarding journal impact, the Journal of Psychology and Health (n=2357) stands out as the most cited journal, followed closely by Health Psychology with 1263 citations, suggesting their high quality.

Science mapping analysis

To visualize data graphically, VOSviewer was selected to analyze the network distribution across various units of analysis. Multiple analyses were conducted, including co-authorship, co-citation, co-occurrence, and bibliographic coupling. VOSviewer was utilized for its expertise in

bibliometric and scientometric analysis, providing intuitive visualization tools that reveal patterns, trends, and relationships within extensive datasets of academic publications, thereby improving the clarity and depth of my research findings.

Co-author analysis

This network reveals clusters of researchers who frequently collaborate within a research field. Unlike individual research, collaborative research generates both quality and quantity in scientific output. The minimum number of documents per country was set to 1, and the minimum number of citations per country was set to 10. Countries without collaboration were excluded from the network map. Out of 90 countries, only 66 met the criteria. The results (see Figure 4) produced 10 clusters in the TPB and HBM frameworks used in health research. The USA emerged as the highest with 31 network links, collaborating with countries such as the UK, Australia, Canada, Ireland, Uganda, Ethiopia, Italy, Bangladesh, etc. The UK ranked second with 29 links compared to the USA.

Australia ranked third with a total of 28 links. Interestingly, Australia collaborated with South Africa, Ethiopia, and Nigeria. Countries with less collaborative support include Nigeria, Portugal, Kenya, Slovenia, Spain, Oman, Uganda, and the United Arab Emirates. These countries had lesser than 2 links, accounting for relatively low collaboration in health research with other countries. Moreover, the health status in African countries is substandard. Additionally, Canada collaborated with the UK, USA, Australia, Netherlands, France, Benin, Oman, Iran, Finland, and Brazil. It is important to note that the majority of these countries have the highest health standards, which explains why extensive research in health is prioritized.

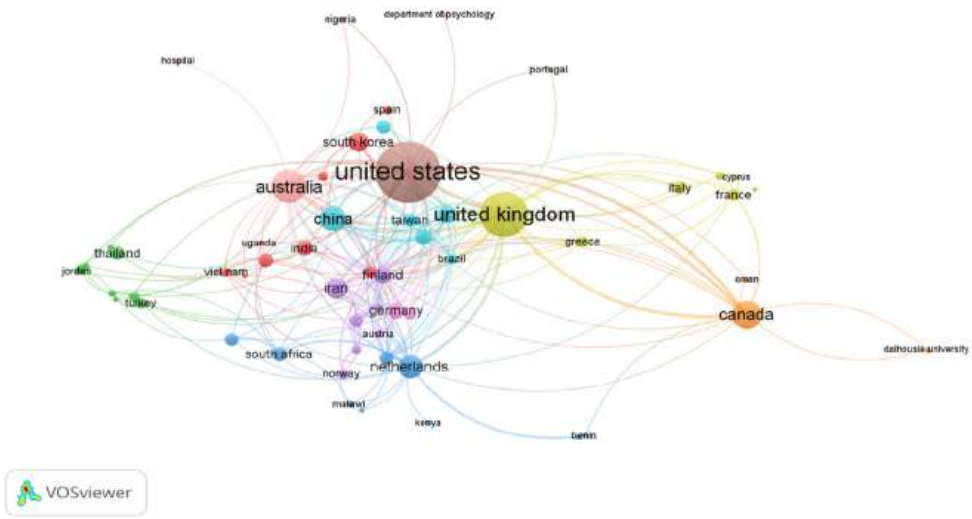

Figure 4. Co-authorship network of countries

Figure 5 illustrates a co-authorship network analysis focusing on authors who have collaborated on at least one document and have been cited over 40 times in health research. Among 2813 authors, 591 met the criteria for inclusion. The analysis identified five clusters, each represented by distinct colors. The largest cluster, shown in red, signifies researchers collaborating in health research. Regarding total link strength (TLS), Johnston M. from the gold cluster recorded 45 TLS, followed by Eccless M.P. from the red cluster with 35 TLS, and Glidewell I. from the green cluster with 25 TLS. The remaining authors had TLS values below 20.

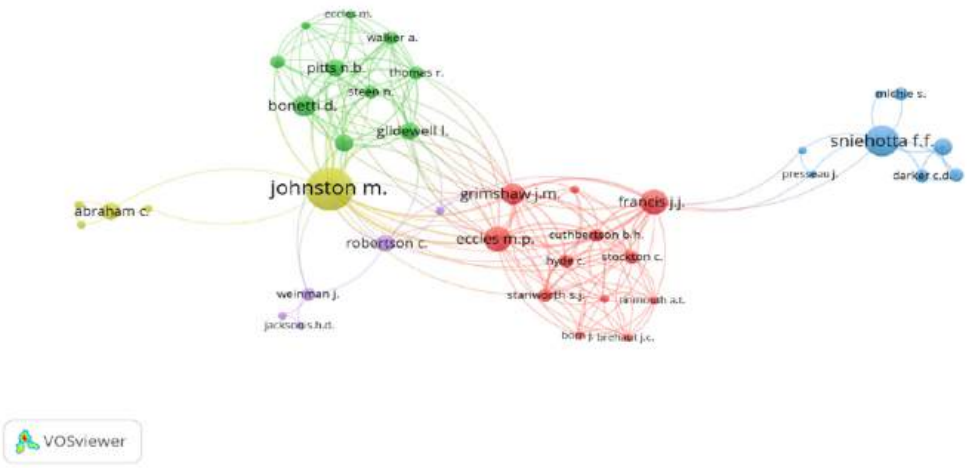

Figure 5. Co-authorship network of authors

Co-citation analysis

Co-citation refers to the scenario when two documents are cited by the same third document (Donthu et al., 2021). Co-citation through thematic clusters helps to uncover intellectual patterns within the scientific knowledge of a particular research domain (Manyaga, 2023). A co-citation analysis was conducted on authors, requiring those in health research to have been cited at least 50 times. Of the 804 studies reviewed in this research, 71 interconnected authors met this citation threshold. The analysis revealed four clusters encompassing 71 items, illustrated by varying colors in Figure 6. Cluster 1, represented in red, highlights the contributions of 23 researchers in the health sector.

Among the 23 authors, Fishbein M. stands out with the highest citation count (n=555), followed by Bandura (n=263), Rosenstock (n=255), and Becker (n=229). In cluster 2, highlighted in green and consisting of 19 authors, the most cited are Sheeran P (n=284), Hagger M. S. (n=259), and Michie S (n=192). Cluster 3, marked in blue, boasts the highest overall citations, featuring Ajzen I. (n=1575), Conner (n=568), Armitage C. J. (n=287), and Sparks P (n=141). In contrast to the previous clusters, cluster 4 has garnered fewer citations, suggesting less interest from re-

searchers. This implies that the works of these authors are cited less frequently. Authors in this cluster include Godin G. (n=314) and Johnston M. (n=266).

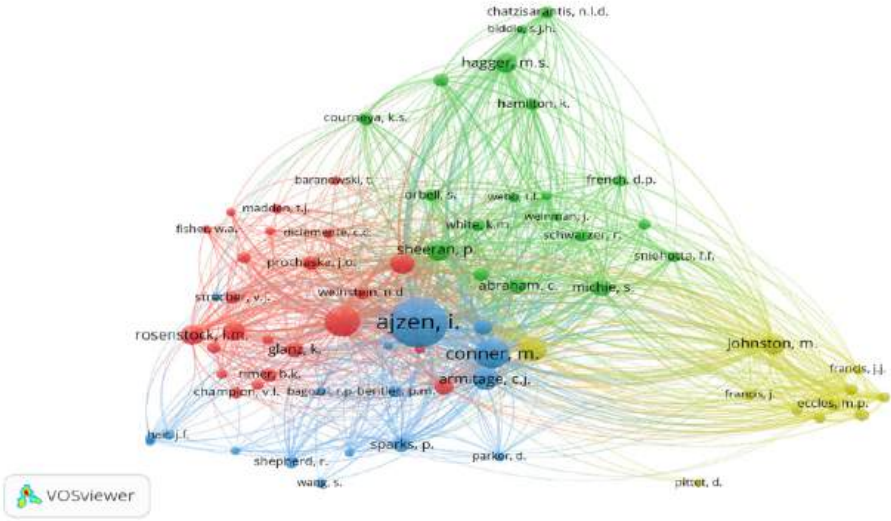

Figure 6. Co-citation of authors

Figure 7 displays co-citations of journals. A threshold of 30 citations per source was established. Interestingly, there is no widely accepted threshold in scientific research. Thus, it is up to researchers to set their own thresholds as long as they can produce meaningful results. Additionally, researchers should consider that low thresholds can lead to large clusters, making it difficult to summarize the main topics within them. Of the 13380 sources available, only 150 met the threshold. The analysis revealed four clusters, each differentiated by four distinct colors. Only the most significant journals within the different clusters are presented.

Cluster one comprises 64 journals, including Health Psychology (n=260 citations), Journal of Applied Social Psychology (n=323 citations), and Organizational Behavior and Human Decision Making (n=204 citations). Cluster two also contains 64 journals such as Vac-

cine (n=304 citations), PLOS ONE (n=246 citations), and BMC Public Health (n=261 citations). Addressing health research focusing on preventing infectious diseases in communities, cluster three comprises of journals like AIDS Care (n=71 citations) and the International Journal of Environmental Research and Public Health (n=59 citations). Finally, the last cluster includes the British Food Journal (n=79 citations) and Appetite (n=200 citations). It is important to note that these journals possess high impact factors- a key criterion for journal ranking.

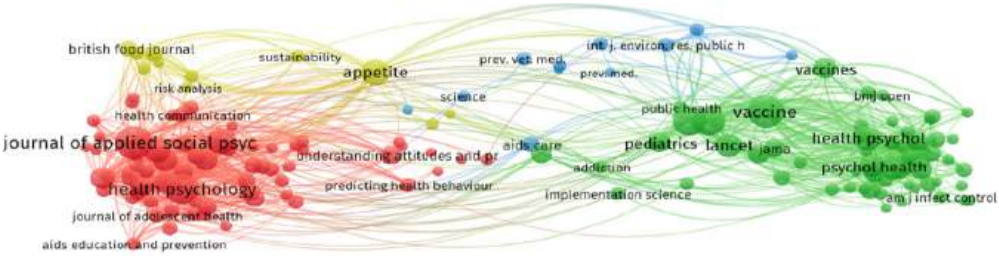

Figure 7. Co-citation of Journals

Bibliographic coupling analysis

Bibliographic coupling is when two publications frequently cite a common work in their bibliographies. This analysis often indicates that the two works referencing the same third work likely share similar subject matter. Kessler (1963) and Weinberg (1974) proposed the concept of bibliographic coupling. Kessler (1963) posited that scientific works carry inherent meanings and various advancements that can suggest relevant connections among the citing works. However, this analysis forms thematic clusters crucial for identifying emerging fields and lesser-studied subfields. Nevertheless, bibliometrics comes with several limitations. It tends to be significant only for works analyzed over a time frame of less than five years. Moreover, Zupic & Čater (2015) criticized it for focusing on specific articles. They also argued that it overlooks significant works,

contrasting with co-citation analysis. They concluded that merely utilizing bibliographic mapping is insufficient. Using VOSviewer, interconnected clusters were presented. For each of the 804 documents, the total strength of the bibliographic coupling links with other documents was calculated, and only the greatest total link strength was selected. Eleven interconnected clusters distinguished by different research themes is presented in table 4. The minimum number of citations required per document was not limited to uncover the most prolific and growing interests in the field of health. Out of 804 articles, 746 were included in the cluster analysis. VOSviewer systematically disqualified 58 articles because they were not connected.

Table 4: Bibliographic coupling of publications

No. of Cluster	Exemplary publications	No. of citations	Cluster description
Cluster 1	Ogden, 2003 Gerend & Shepherd, 2012 Moody et al., 2018 Cowan et al., 2013 Webb et al., 2010	274 271 261 204 180	Improving cognitions in predicting health behavior.
Cluster 2	Bae & Chang, 2021 Norman et al., 1999 Guidry et al., 2021 Kim & Park, 2012 Whitby et al., 2006	349 278 275 264 248	Behavioral intentions towards health behavior
Cluster 3	Reyna & Farley, 2006 Griffin et al., 1999 Armitage & Conner, 1999a Hagger et al., 2001 Abraham et al., 1998	888 714 410 196 187	Self-efficacy and development of preventive behaviors
Cluster 4	Francis et al., 2010 Zagata, 2012 Register-Mihalik et al., 2013 Dunn et al., 2011 Clayton et al., 2008	1493 160 125 117 112	Fast food and organic food consumption
Cluster 5	Ng et al., 2020 Smith & Stasson, 2000 Caudwell & Hagger, 2015 Boase et al., 2019 Aikman et al., 2017	35 24 19 11 2	Core behavioral constructs and theories explaining health behavioral change

Cluster 6	Cowie et al., 2018 Qiao et al., 2021 Kim, 2020 Wan et al., 2022	11 6 4 3	Physical activity and protecting young children
Cluster 7	Tyson et al., 2014 Ghasemi et al., 2017 Phillipson et al., 2013	59 9 39	Heterosexual risks and delivery modes in pregnant women
Cluster 8	Nomura et al., 2009	35	Care giving and dementia
Cluster 9	Bonetti & Johnston, 2008 Maciver et al., 2021	34 10	Rheumatoid arthritis and stroke
Cluster 10	Weston et al., 2020 Naja et al., 2017	33 9	Infectious diseases and disaster preparedness
Cluster 11	Armitage & Conner, 1999a Doreen & Contento, 2001	410 55	Food and diet

Cluster 1: Improving cognitions in predicting health behavior.

Numerous psychological factors drive individuals to adopt health-protective behaviors. However, current studies often focus on intentions rather than the behaviors themselves. This collection includes articles that merge various social cognition models, with some aimed at comparing their effectiveness. Cowan et al. (2013) performed a content analysis of health applications to determine if they set realistic consumer expectations in the USA. They discovered that the applications available in Apple stores contained little theoretical content. Furthermore, researchers have encouraged collaboration among sports, health, and behavioral change experts to enhance the behavioral change content in these applications. Researchers such as Moody et al. (2018), Ogden (2003), and Webb et al. (2010) have evaluated different theories to assess their effectiveness in facilitating changes in addictive behaviors. Among these models, the TPB by Gerend & Shepherd (2012) was identified as the most effective for explaining behavioral changes. Nonetheless, researchers highlighted the need for modifications and the creation of integrated models, allowing for a diverse range of constructs to be studied in relation to human behavior. Critics have also pointed out that some models include unclear constructs, which hinder hypothesis generation (Ogden, 2003).

Cluster 2: Behavioral intentions towards health behavior

While most publications concentrate on intentions, cluster two predicts individuals' intentions more than their actual behaviors. Although this cluster highlights technology significantly, the bulk of relevant articles centres on COVID-19. Given its widespread impact, COVID-19 evokes anxiety and fear among people. Preparing for the post-corona phase has proven challenging for business owners. In the tourism sector, untact tourism practices were suggested to allow operations to continue while prioritizing tourists' health. Drawing on HBM and an extended TPB, a study by Bae & Chang (2021) found that attitude was a vital mediator between affective risk perception and behavioral intention. Guidry et al. (2021) noted that the most effective way to foster a positive attitude toward COVID-19 vaccine uptake is by correcting misinformation related to the vaccine. However, it is crucial that practitioners' efforts extend beyond communication campaigns and addressing vaccine concerns to effectively build public trust in government agencies.

Cluster 3: Self-efficacy and development of preventive behaviors

The cluster focused on decision-making in adolescents, citing a total of 2,395 times. Young people often engage in unhealthy behaviors, and altering these patterns can greatly benefit society. Adolescents with their peers frequently struggle to make sound decisions regarding risks and benefits (Reyna & Farley, 2006). Studies indicate that employing health models and comprehending the diverse cognitive factors influencing health behaviors can enhance these behaviors (Armitage & Conner, 1999a). Furthermore, health models can also be leveraged to design effective interventions (Abraham et al., 1998).

Given that young men are shaped by their social environment, it is anticipated that subjective norms can influence their choices. Nevertheless, there is a concern that significant individuals in their lives might possess unique characteristics that could inadvertently guide them toward poor decisions (Griffin et al., 1999). Adolescents often take risks

more than they realize, so behavioral willingness may be a stronger indicator of their likelihood to engage in risky behaviors than merely assessing their intentions. In contrast, when young individuals cultivate positive attitudes and a sense of self-efficacy, they are more inclined to develop intentions to engage in physical activity (Hagger et al., 2001). Therefore, intention plays a crucial role in structuring the psychological components of health behaviors and should not be overlooked (Abraham et al., 1998).

Cluster 4: Fast food organic food consumption

Since its initial publication in 2008, this cluster has centered on fast food and consumer perceptions of organic food consumption. The articles in this cluster used the TPB to explore various relationships among fast food, and organic food. Although organic food production and consumption have experienced slow growth in recent years, they remain one of the rising trends in the agricultural sector. In examining consumers' beliefs and behavioral intentions regarding organic food, Zagata (2012) identified that attitudes and subjective norms are the strongest predictors of the intention to buy organic food. Fast food consumption is significantly influenced by a particular group of individuals who seek convenient, delicious, and fulfilling meals. The desire to eat fast food is also shaped by convenience (Dunn et al., 2011). These aspects raise urgent concerns regarding efforts to promote healthier eating habits. The obstacles to consuming both fast food and organic options differ. Risks associated with eating street food include the possibility of food poisoning, which can stem from inadequate food handling equipment and poor hygiene practices in food service businesses (Clayton et al., 2008).

Cluster 5: Core behavioral constructs and theories explaining health behavioral change

This cluster highlights theories that forecast human behavior in various health domains. The theory most extensively examined here is the TPB, setting it apart from other clusters. Researchers have ex-

plored the impact of attitudes (Caudwell & Hagger, 2015; Aikman et al., 2017; Boase et al., 2019; Ng et al., 2020), subjective norms (Caudwell & Hagger, 2015), and perceived behavioral control (Smith & Stasson, 2000) in predicting health-related behavior within communities. These factors serve as vital indicators of actual behavior and are thoroughly assessed during the development of the data collection questionnaire. Research has shown increased attention to the model's effectiveness in predicting health behaviors. Ng et al. (2020) examined the factors influencing influenza vaccination, integrating HBM and TPB with additional psychosocial elements. The study determined that attitudes are the most significant predictor of both intentions to receive the vaccine and actual behavior, aligning with findings from Caudwell & Hagger (2015). Some individuals partake in behaviors due to insufficient information, while others may act based on third-party advice, particularly when their own knowledge falls short of expectations (Aikman et al., 2017). Thus, prioritizing informational campaigns that empower individuals to make educated choices about consumable products is essential (Boase et al., 2019) for fostering healthy behaviors.

Cluster 6: Physical activity and protecting young children

This cluster emphasizes physical activity and strategies to safeguard children from unhealthy behaviors. Wan et al. (2022) investigated the positive correlation between motivational and social cognition factors, intention, and behavioral adherence to COVID-19 prevention among parents of young children using the TPB. They utilized a longitudinal design for data collection. Their findings indicate that TPB effectively explains the various prevention measures parents employ to protect against COVID-19. The previous study's findings contradicted with Qiao et al. (2021), who reported no association between intentions and the relevant behavior. Research has sought to evaluate the effectiveness of the TPB and the HBM in forecasting human actions. While developing a tool to assess beliefs about physical activity, Qiao et al. (2021) combined elements from both TPB and HBM. The study's concurrent predictive validity revealed a link between perceived behavioral control

and physical activity. Moreover, the results indicated that norms, barriers, and attitudes were significantly associated with physical activity. These outcomes align with Cowie et al. (2018), who stressed the critical role of subjective norms, attitudes, and control in forming robust intentions. This further highlights the importance of merging HBM and TPB constructs to better understand human behavior.

Cluster 7: Heterosexual risks and delivery modes in pregnant women

A plethora of research has been conducted to study unwanted sexual behaviors, including sexually transmitted diseases and unwanted pregnancies. However, few studies have focused on practical interventions. To address this limitation, a meta-analysis was performed to examine interventions informed by TPB to reduce unwanted sexual behaviors (Tyson et al., 2014). The inclusion criteria for this study comprised randomized controlled trials that compared TPB-based interventions against a specific control group. The findings indicated that pooled effect sizes had a more minor yet significant impact on behavior. Ghasemi et al. (2017) studied two groups using a pre- and post-test format with a reliable questionnaire to evaluate the effects of educational interventions based on TPB on pregnant women. The results revealed significant statistical differences in the two groups' outcome evaluations, attitudes, and behavioral beliefs. The incumbent training programs were more effective than unsystematic training when they integrated TPB. Therefore, it is recommended that policymakers implement and evaluate training programs based on theories of behavioral change.

Cluster 8: Care giving and dementia

Dementia poses significant challenges for the elderly. This raises concerns about the need for intervention programs aimed at curbing its widespread. To explore early signs of dementia in older individuals within Japanese rural communities, Nomura et al. (2009) implemented a community health action research model that involved planning, action,

and reflection to identify strategies that empower those affected by dementia. Caregivers of the elderly received counselling and educational programs to enhance skills. Data collected indicated that these educational programs increased awareness of dementia. Research indicates that having a co-resident caregiver improves chances of individuals remaining in their homes, even when diagnosed with dementia. However, this can lead to challenges if caregivers do not receive adequate respite from their duties. To enhance the effectiveness of caregivers supporting dementia patients at home and in rehabilitation settings, it is crucial to promote service optimism by developing respite services that balance the needs of care recipients and their caregivers (Phillipson et al., 2013).

Cluster 9: Rheumatoid arthritis and stroke

This cluster included studies on stroke in patients as well as rheumatoid arthritis. Given that stroke is a prevalent global issue, it's crucial to investigate ways to minimize ambulation limitations in stroke patients. A study by Bonetti & Johnston (2008) tested TPB's effectiveness in predicting walking intentions and related limitations among stroke patients. Participants were recruited for an initial two-week study, followed by a check-in six months later. Results showed that greater perceptions of control correlated significantly with fewer walking limitations and enhanced recovery over six months. These findings indicate that TPB explains considerable variance in walking limitations and recovery. Furthermore, integrating technology with medical facilities and processes is essential to improving medical care. Rheumatoid arthritis poses another challenge globally, and telehealth can serve as a remedy to assist patients. Randomized controlled trials were conducted on patients with rheumatoid arthritis to evaluate the effectiveness of telehealth interventions. This analysis was performed through a systematic narrative review. The completed randomized controlled trials included 791 participants which indicated a positive effect on physical activity, medication adherence, and self-efficacy levels. This suggests that well-designed telehealth interventions can help achieve positive management outcomes in patients with rheumatoid arthritis (Maciver et al., 2021).

Cluster 10: Infectious diseases and disaster preparedness

Social psychology and behavioral science are essential in addressing infectious diseases. Individuals are motivated by beliefs that necessitate control. The TPB posits that the key factors influencing intentional behavior are a person's intention to act and their level of control over that action (Naja et al., 2017). Therefore, researchers must focus on shaping behaviors within the context of infectious disease outbreaks or emergencies. This can be clarified by applying behavior change theories to understand and enhance individual engagement in protective health practices that ensure societal safety and health preservation. Despite extensive research, additional efforts are needed to integrate and evaluate behavioral change models in health and intervention strategies (Weston et al., 2020).

Cluster 11: Food and diet

This cluster included two highly cited publications centered on diet. Obesity is a primary concern in developed countries. The top-ranking nations have enacted dietary reforms to improve health; however, these initiatives often create issues due to imbalanced diets. One significant result of poor nutrition is the buildup of fats on the heart, a serious matter in developed nations. Nutritionists need to quickly adjust to the cultures of Europe and America to establish a thorough strategy for balanced diets aimed at heart disease prevention. Over time, theories from social psychology, such as the HBM and the TPB, have been employed to understand dietary health behaviors. Doreen & Contento (2001) studied the influence of health behavior variables on fat-related dietary practices among Chinese Americans. Their findings indicated that TPB factors, including perceived barriers and attitudes, accounted for 19% of the variance in predicting reductions in dietary fat.

Co-occurrence

Co-occurrence analysis of keywords is a content analysis method that leverages terms found in documents to establish relationships and reveal the conceptual structure of a research field (van Eck and Waltman

2014). The study extracted 4,544 keywords from 804 documents, applying a minimum occurrence threshold of 25. Consequently, 97 keywords met this requirement. Figure 8 demonstrates that humans emerged as the predominant concept across all studies, with 1075 occurrences. Following this were gender-related concepts, including female and male, totalling 756 occurrences. TPB emerged as the most widely explored theory, with a total of 375 occurrences. Findings reveal that studies frequently employ models like HBM (205 occurrences) and TPB to gain insights into behavior change. Moreover, the results indicate that countries including China, the United Kingdom, and the United States often use TPB and HBM to study health behavior. In terms of statistical methods, the data shows that Structural Equation Modeling is the preferred analytical technique in these studies for hypothesis validation and model testing.

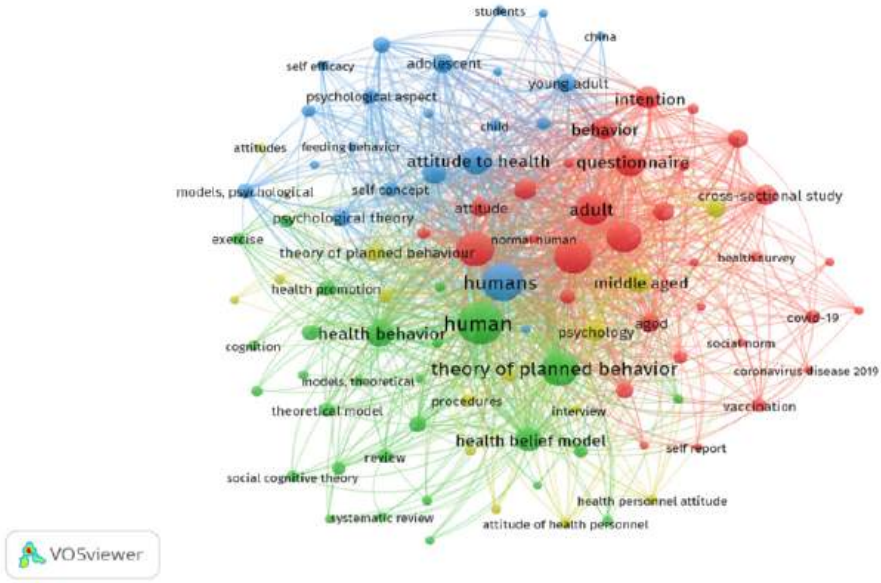

Figure 8. Co-occurance of all keword analysis

Discussion and conclusion

The current study was undertaken to provide a clear view of structural knowledge from studies that broadly examined HBM and TPB regard-

ing various health practices. 804 documents were analysed using VOS software to determine research trends, influential authors, top journals, and the most cited articles. The trend began with the first research published in 1982. Interest in TPB and HBM significantly increased after 2011. Notably, the number of health studies has surged recently, especially in 2022, which saw the highest volume of publications. Factors contributing to this trend include rapid technological advancements and improved hospital practices, greatly enhancing health outcomes. Additionally, the trend indicates a rising interest in merging psychology and behavioral theories, which addresses the first research question.

Table 1 addressed the second research question by highlighting the most productive authors. We considered the number of publications and citations per year to measure productive authors. While citations indicate the impact of authors in their field, the number of publications demonstrates their productivity (Donthu et al., 2021). Notably, Table 1 also showed each author's h-index, which serves as a performance metric, despite being primarily descriptive. The leading author, Johnston, M., had 10 publications with an impressive h-index of 105. The second author, Godin, G., from Canada, published 10 documents and held an h-index 104. Godin is an exceptional researcher who has significantly contributed to health and fitness. He has collaborated extensively to advance this field, such as his work with Godin & Shephard (1985) to evaluate community exercise behavior. Additionally, other researchers have studied the effectiveness of the TPB in predicting various behavioral habits. Their research focused on validating TPB constructs concerning mindfulness intention (Chatzisarantis & Hagger, 2007) and exploring the connections among attitudes, intentions, beliefs, and behaviors (Armitage & Conner, 1999b). Given TPB's widespread use in research, this may account for the high citation counts.

On the other hand, recent researchers obtain funding from various countries and non-governmental organizations to investigate complex diseases, particularly in developing nations. A rise in publication numbers and authors can indicate the quality of a research field. As shown in

Table 3, findings imply that the USA prioritizes research and development within higher education institutions, backed by substantial funding. The study's findings align with those of Sweileh (2020), who performed a bibliometric analysis of health research. Regarding impact within this field, Francis et al. (2010) is the most cited publication, referenced 1493 times. This study established a framework for determining sample size in data collection; it specifically aimed to identify a consistent method for achieving data saturation during interviews. The second most cited publication by Reyna & Farley, (2006) received 888 citations. As mentioned earlier, TPB and HBM are commonly used to study health-related problems in societies. Their study emphasized the necessity for interventionists to create programs that tackle specific issues, explain the rationale behind these issues, and enable individuals to adopt healthier behaviors.

An analysis of co-authorship highlighted collaborations among authors, countries, and institutions. Collaboration aids less prominent authors, governments, and institutions in connecting and engaging with high-quality research, enhancing their academic networks (Donthu et al., 2021). Country-based co-authorship analysis illustrated that health research thrives on a strong tradition of collaboration. While these findings provide insight into the intellectual makeup of the research domain, they can also encourage emerging researchers in health to effectively apply the TPB and HBM. The USA, UK, Australia, Canada, and Ireland are countries with the highest collaboration in the research field. Countries with less collaboration include Nigeria, Portugal, Kenya, Slovenia, Spain, Oman, Uganda, and the United Arab Emirates. It is essential to note that countries with high collaboration tend to have the highest health standards. However, there are notable concerns that international collaboration still lags despite the importance of health.

Progress in methodological approaches has enabled researchers to evaluate interventional health practices cost-effectively, leveraging HBM and TPB. Significant collaborations among authors indicate that highly cited researchers have engaged in various partnerships. Analysis through bibliographic coupling and co-occurrence provided more pro-

found insights, resulting in eleven unique clusters. Each of these clusters had a combination of at least two publications. Analysing bibliographic coupling showed that research has evolved towards more advanced methodologies to create effective health interventions. The results also indicate that theoretical frameworks (i.e. TPB and HBM) attract interest from leading researchers.

Figures 6 and 7 present the co-citation analysis of authors and journals. Findings reveal that the TPB, as noted by Ajzen (2012), Ajzen & Fishbein (1977), and Barbera & Ajzen (2020), is the most frequently examined model for predicting human behavior. Furthermore, social psychologists emphasize the necessity of understanding human behavior through the lens of theoretical integration. Co-citation showed that journals publishing in social psychology receive more citations than others. For example, Health Psychology (n=260 citations), Journal of Applied Social Psychology (n=323 citations), and Organizational Behaviour and Human Decision Making (n=204 citations) were among the highly cited journals. Finally, co-occurrence examined the most frequently used keywords in documents. It helps determine common research themes and underlying specialties in the field. Studies have explored HBM and TPB extensively. This suggests that there is a growing trend in topics of health behavior.

Clusters indicated that humans were the primary focus of studies. Understanding human behavior and crafting specific interventions appear to have been priorities for these clusters. Notably, COVID-19 posed a significant threat to public health, making rapid scientific studies essential for developing a cohesive strategy to mitigate the virus's spread. Social interactions were halted, education shifted to online platforms, leaving those unable to adapt stuck in physical classrooms. During this period, some schools and governments globally exempted students from having to repeat their classes. In response to the pandemic, governments implemented swift measures, including mass vaccination campaigns and promoting social distancing (Bae & Chang, 2021). Given the increasing frequency of global crises, disaster preparedness should remain at the

forefront of national policy agenda (Manyaga et al., 2020). In summary, this review has demonstrated that TPB and HBM offer a helpful framework for creating interventions to enhance health behavior. It also presented a thorough review of existing literature regarding TPB and HBM. Notably, this study's bibliometric research and co-occurrence analysis revealed clusters that indicate different research patterns. Future research may leverage on these findings to forecast and identify emerging topics and pinpoint gaps in the current study.

Additionally, novice researchers can utilize co-authorship analysis to identify potential collaborators in scientific health research, including specific countries and researchers. Conducting a study is challenging due to various limitations. The primary limitation of this research is its focus solely on health behavior. Broader studies encompassing technology, sustainable development, education, and tourism could offer valuable perspectives on applying social psychology theories in everyday scenarios. Moreover, this study only examined TPB and HBM as frameworks for analysis. Future research may explore additional social psychology models to assess their relevance in predicting health behaviors.

The databases for collecting studies were limited to WoS and Scopus and only documents written in English were included in the collection criteria. The disadvantage of monopolizing one database and studies in English is that important publications can easily be omitted due to their absence in a respective database. Future studies may consider accessing other databases and expanding the scope of the research. Regarding science mapping software, future studies may explore various available software packages such as SciMat, CitNetExplorer, and CiteSpace to better illustrate relationships between different units of the research. In addition, the study has utilized VOSviewer as a bibliometric tool to perform several types of analyses. Future research may use other advanced bibliometric software such as Leximancer, Gephi, and Leximancer for improved visualization.

Lastly, while our study was conducted in 2024, articles published in 2025 were included to provide updated developments in the health re-

search literature. Consequently, we recognize that data from 2025 is still incomplete, and as a result, we need to be careful in interpreting conclusions based on these papers. However, their inclusion allows the bibliometric mapping to reflect the latest changes in research dynamics. Their inclusion also indicates an ongoing interest in the application of health behavior models, particularly the TPB and HBM within health research.

Statement of Research and Publication Ethics

This research was conducted in accordance with the rules of scientific research and publication ethics.

Authors' Contribution Rates to the Article

The authors contributed equally to the work.

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This research is not subject to any conflict of interest.

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Extended Summary

Sağlık Davranışında Kırk Yıllık Araştırma: Planlanmış Davranış Teorisi ve Sağlık İnanç Modeli'nin Bibliyometrik Analizi

Bibliyometrik analiz, planlı davranış teorisi (TPB) ve sağlık inanç modeli (HBM) araştırmalarındaki tematik örüntüleri, yapısal gelişmeleri ve iş birliği ağlarını sistematik olarak haritalamak için önemlidir. Bu çalışma, kilit yazarları, kurumları ve ortaya çıkan araştırma konularını belirleyerek, bu teorik modellerin davranış araştırmalarını nasıl şekillendirdiğini açıklığa kavuşturmakta ve teorik bütünleşmeyi ve pratik karar almayı desteklemektedir. Bu amaç doğrultusunda, bu çalışmanın üç özel hedefi vardır: 1) Ortaya çıkan araştırma temalarını ve eğilimlerini, önde gelen yazarları ve TPB ve HBM tabanlı çalışmalar yayınlayan en iyi dergileri belirlemek; 2) tematik ilişkileri belirlemek için ortak yazarlık, aynı anda kullanılan anahtar kelimeler ve atıf ağı verilerini haritalamak; ve 3) TPB ve HBM tabanlı çalışmaların sağlık bağlamları genelindeki entelektüel ve kavramsal yapısını analiz etmek.

Çalışmamız, sağlık araştırmalarında yaygın olarak kullanılan iki teorik kavram olan Ajzen'in TPB'sinden (1987; 1991; 2011; 2012) ve Rosenstock'un HBM'sinden (1974) yararlanmaktadır. TPB'ye göre niyetler gerçek davranışı öngörür ve niyetler de tutumlardan, öznel normlardan ve algılanan davranışsal kontrolden etkilenir. Tutumlar, bir kişinin davranışlar ve sonuçlar hakkındaki olumlu ve olumsuz değerlendirmeleridir. Öznel normlar, bir bireyin önemli başkalarının etkisini nasıl algıladığını gösterir. Algılanan davranışsal kontrol, bir davranışta bulunmanın ne kadar kolay veya zor olduğunu ölçer (Madden vd., 1992; Ajzen, 1991). HBM, insanların hastalıkları önlemek ve tespit etmek için neden ve hangi koşullar altında hareket ettiğini anlamak için geliştirilmiştir. HBM, sağlık davranışını altı yapı aracılığıyla öngörür: algılanan duyarlılık, algılanan şiddet, algılanan engeller, algılanan faydalar, harekete geçme ipuçları ve öz yeterlilik (Rosenstock, 1966; Rosenstock, 1974). HBM, bireylerin bir hastalığa yakalanma olasılıkları varsa ve ciddi sonuçlar algılarlarsa önleyici davranışlarda bulunacaklarını belirtir. Ayrıca, bireyler faydalı olduklarında sağlıklı davranışlarda bulunma olasılıkları yüksektir, ancak engeller faydalarından daha ağır basarsa, bu davranışlara katılmaya karşı koyabilirler. Dahası, bireyler belirli ipuçları mevcut olduğunda ve sağlıklı bir davranışta bulunma yeteneğine sahip olduklarında bir davranışta bulunma olasılıkları yüksektir. TPB

ve HBM'nin çok çeşitli sağlık davranışlarını açıklamada yaygın olarak kullanılmasına rağmen, sağlık alanlarındaki önceki araştırmalar bu iki çerçeveyi ayrı ayrı uygulamış ve bu da politika yapıcılara müdahale ve rehberlik sağlama konusundaki etkilerini anlamada önemli bir boşluk yaratmıştır.

Web of Science (WoS) ve Scopus veri tabanları, son derece saygın bilimsel indeksler olarak kabul edildikleri için kullanılmıştır. Her iki veri tabanı da çok sayıda yüksek etkili dergi ve konu kategorisi içermeleri ve yırtıcıları doğru bir şekilde filtrelemedeki üstün yetenekleri nedeniyle seçilmiştir (Manyaga 2023; Paul vd. 2021). Konu bazlı bir arama yoluyla, "sağlık davranışı", "sağlık inanç modeli", "HBM" ve "planlı eylem teorisi", "TPA" gibi farklı terimler kullandık ve 1558 yayından oluşan bir ilk listeye ulaştık. Tüm tekrarlar ve İngilizce olmayan yayınlar çıkarıldıktan sonra, kalan 804 dergi makalesi kabul edildi ve daha ileri analiz için değerlendirildi. Bulgular, 2010 ile 2024 yılları arasında sağlık alanında TPB ve HBM ile ilgili yayın sayısının sürekli arttığını ve 2024 yılında 90'ın biraz üzerinde yayına ulaştığını ortaya koydu. İlginç bir şekilde, 2025'te keskin bir düşüş gözlemlendi. Ancak, yılın henüz tamamlanmadığını ve analiz sırasında 2025 yılına ait tam verilerin mevcut olmayabileceğini belirtmek önemlidir.

En üretken yazarlar arasında Johnston M. (TP=11), Godin G. (TP=10) ve Hagger M.S. (TP=9) en etkili yazarlar olarak ortaya çıktı. Benzer şekilde, teoriye dayalı görüşme çalışmalarında veri doygunluğunun operasyonel hale getirilmesini ele alan Francis vd. (2010) en çok atıf alan makale olurken, ikinci ve üçüncü sırada Reyna & Farley (2006) ve Griffin vd. (1999) yer aldı. Ayrıca en çok atıf alan dergileri ve menşe ülkelerini de inceledik. Çalışmamız, ABD'nin en fazla atıf aldığını ve Journal of Psychology and Health'in lider olduğunu ortaya koydu. Ülkeler açısından Birleşik Krallık ve Kanada ikinci ve üçüncü sırada yer aldı. Bilimsel haritalama, çeşitli birimler arasında analiz edilen ağ dağılımını ortaya koydu. Bir araştırma alanında sıklıkla iş birliği yapan araştırmacıları ortaya çıkarmak için yapılan ortak yazar analizi, en yüksek ağ bağlantılarına sahip ABD'nin Birleşik Krallık, Avustralya, İrlanda ve Uganda ile iş birliği yaptığını, ikinci ülke olarak Birleşik Krallık'ın ise bu ülkeler arasında sağlık araştırmalarının ciddiyetini gösteren 29 bağlantıya sahip olduğunu ortaya koymuştur. Ayrıca, aynı üçüncü belge tarafından atıf yapılan iki belgeyi ortaya çıkarmak için ortak atıf yapılmıştır. Ajzen, belirli bir araştırma alanındaki entelektüel ve bilimsel bilgisini öne sürerek en çok atıf alan kişi olmuştur.

Anahtar kelime analizine göre, 1075 kez geçen "insanlar", ardından "erkek ve kadın", "TPB" ve "HBM" tüm çalışmalarda baskın anahtar kelime olarak ortaya çıkmıştır. İstatistiksel yöntemler açısından, Yapısal Eşitlik Modellemesi yaygın olarak kullanılmıştır. Bibiyometrik eşleştirme, farklı alanlarda baskın olarak bağlantılı tematik kümeler olduğunu göstermiştir. Elbette, çalışmamızın gelecekteki çalışmalar tarafından ele alınması gereken farklı sınırlamaları vardı. Bu araştırmanın temel sınırlaması, yalnızca sağlık davranışına odaklanmasıdır. Dahası, bu çalışma yalnızca TPB ve HBM'yi analiz çerçevesi olarak incelemiştir. Ayrıca, çalışma toplama veritabanları WoS ve Scopus ile sınırlıydı ve toplama kriterlerine yalnızca İngilizce yazılmış belgeler dahil edildi. Bilim haritalama yazılımları açısından, gelecekteki çalışmalar araştırmanın farklı birimleri arasındaki ilişkileri daha iyi göstermek için SciMat, CitNetExplorer ve CiteSpace gibi yazılım paketlerini inceleyebilir. Ek olarak, çalışmada çeşitli analiz türlerini gerçekleştirmek için bibliyometrik araç olarak VOSviewer kullanılmıştır. Gelecekteki araştırmalar, geliştirilmiş görselleştirme için Leximancer, Gephi ve Leximancer gibi diğer gelişmiş bibliyometrik yazılımları kullanabilir. Sonuç olarak, TPB ve HBM, sağlık davranışını iyileştirmek için müdahaleler oluşturmak için bir çerçeve sunmaktadır. Özellikle, bu çalışmanın bibliyometrik araştırması ve eş zamanlılık analizi, farklı araştırma modellerini gösteren kümeleri ortaya çıkarmıştır. Gelecekteki araştırmalar, ortaya çıkan konuları tahmin etmek ve belirlemek ve mevcut çalışmadaki boşlukları tespit etmek için bu bulgulardan yararlanabilir.