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Current Approaches of Artificial Intelligence (AI) in Leading Behavioural Change: The Latest Review

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ABSTRACT

Digital health is plagued by low interest and adherence, but research suggests improvements are possible. Non-health care, for-profit digital enterprises like LinkedIn, Twitter, and Facebook undertake behavioural experiments to enhance user engagement. Today, everyone is impacted by commercial determinants of health, and the selection of unhealthy options compounds economic, social, and racial disparities that already exist. However, healthcare providers tend to prioritize pharmacological approaches at the expense of influencing patients' actions. Thus, it is crucial to ensure that artificial intelligence (AI) is integrated as well as applied within the systems to improve related fields. Both Scopus and Web of Science (WoS) have indexed the previously examined body of work in their respective databases. This review is going to be divided into three different themes: (1) health, (2) education, and (3) other fields. This paper aims to analyse the existing data or outcomes via analysis, categorization, comparison, and summary. It also may uncover research gaps and explore field possibilities. This review included English-language research and literature from 2022. This study summarises current approaches of Artificial Intelligence (AI) in leading behavioural change from different fields of literature.

1. Introduction

Health education and promotion applications powered by artificial intelligence (AI) may assist in achieving numerous United Nations sustainable development objectives. India's first Hinglish AI chatbot is the Population Foundation of India's SnehAI. It promotes private, nonjudgmental discussions about taboo topics like safe sex and family planning and provides accurate, relevant, and reliable information and resources. Having the ability to learn is crucial since it teaches others how

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to analytically identify the challenges and come up with acceptable solutions [1]. The Population Foundation of India launched SnehAI, the first Hinglish (Hindi+English) AI chatbot, to promote good social and behavioural change in India. It is a secure place to discuss difficult topics like contraception and safe sex and discover practical tools [2]. Note that patient behaviour is a crucial element in terms of influencing health outcomes. Studies have found that the County Health Rankings (CHR) Model assigns a greater weight (80%) to socioeconomic, lifestyle, and environmental variables than to clinical treatment (which is assigned a 20% weight). If there is one thing that should take up from the current epidemic, it's the importance of considering factors other than clinical treatment [3].

The results of this study demonstrate how difficult it is to keep individuals on a healthy behaviour track just via AI intervention. Results also imply that combining human and AI communication is more successful than sending health information by AI alone, even if the information is identical. Other than that, possible positive effects on free will health behaviour change due to video message companion assistance. It is worth noting that the companions were not specialists, yet they still did a good job. Therefore, it is clear that face-to-face interaction is essential for health treatments [4]. Since the private sector is investing in AI and other developing technologies, it is imperative that public health professionals and politicians become familiar with and actively work to oppose the commercial marketing of goods damaging to health. To maintain calm in the dynamic, ever-changing modern world, it is essential to consider the anticipated ecological conditions, such as humidity and temperature while saving energy.

It has been suggested that the heating, ventilation, and air conditioning (HVAC) system may adapt in employing patterns, shifts in usage patterns, as well as broken equipment using the latest Internet of Things (IoT) technologies to disseminate information across the building in conjunction with control formats, cloud-based predictive analytics, local open standard data, as well as AI algorithms. Furthermore, the input-output data from the system is utilized to build up and train the model, demonstrating the practicality of fuzzy modelling via human logic and reasoning using if-then rules. In addition, it offers benefits in terms of predictive functions for dealing with uncertainty and nonlinearity as well as researching the efficacy of the suggested models [5].

This is consistent with the prediabetes pandemic, which needs a scalable, resource-efficient way to provide the Diabetes Prevention Program (DPP). An AI-powered program is one such option. Although the National DPP effectively lowers diabetes rates and healthcare costs, it is often resource-intensive to implement. Apart from that, weight reduction and maintenance results with an AI-powered DPP were comparable to those with other in-person and digital programs that did not use AI. Participation in AI-based coaching and regular weighing, as well as completing Centers for Disease Control and Prevention (CDC) lessons, enhanced the probability of reaching a 5% weight reduction [6]. To capture action types with varied periods, the convolution findings are linearly weighted and merged. At the same time, the algorithm improves data set randomization and processing of key information loss.

Furthermore, the primary objective and purpose of this paper is to analyse the previously gathered information and findings. This may be accomplished in several ways, including via the use of analysis, categorization, comparison, and summary. This paper will be useful for determining where more study is needed and investigating untapped potential in a certain sector.

2. Literature Review

2.1 Health

The widespread prevalence of unhealthy diets is a pressing worldwide issue, yet current approaches to improving diet quality are laborious and costly. Moreover, the evidence on the efficacy

of phone-based programs in enhancing nutrition data collecting and dietary quality, particularly among teenagers in developing countries, is thin. To solve these issues, we created a mobile app using AI known as Food Recognition Assistance and Nudging Insights (FRANI). Here, image recognition, tracking, analytics, and gamified nudges contribute to FRANI's capacity to encourage users to make healthy food choices. Moreover, concerning a community at malnutrition risk, the successful operation and widespread diffusion of FRANI may be a crucial step toward highly scalable nutrition data collecting and improved dietary options [7].

In addition, the usage of health-related applications and wearable technology has led to a rise in the number of people keeping their health records. Cost and accessibility are two problems that plague human-run health promotion initiatives. The healthcare industry has recently focused more on developing AI-based health guidance systems in response to personnel shortages and cost-cutting measures. Some scholars speculate that AI will replace advanced human jobs to some degree in the future. Unfortunately, changing people's habits with technology alone is challenging [8]. Scholarly recommendations for using AI chatbots for adolescent and young adult education, promotion of reproductive and sexual health as well as advocacy for women's and girls' health rights in India are provided via an analysis of SnehAI based on the Gibson theory of affordances [2]. During 5 months, SnehAI saw 8.2 million messages being exchanged, demonstrating the app's success in keeping its users interested, particularly young guys.

Concerns and queries regarding sexual and reproductive health, as well as related themes, accounted for over half of all incoming messages from users. To sum up, SnehAI did a great job coming across as a reliable guide. Moreover, the curated material was engaging and informative, and the chatbot's natural language processing technology was efficient and adept at tailoring its responses to individual users [2]. There has been a recent uptick in the adoption of mobile apps in the medical field. For example, CALO Mama Plus is a smartphone health software we have created that uses AI to keep track of a user's eating habits, physical activity, mental state, and quality of sleep, as well as to calculate that user's caloric intake and provide personalized recommendations [9]. Other than that, [10] added that if representational alterations and behavioural shifts, they will employ Bayesian inference. Now is the time to put cutting-edge digital health technologies to use in aiding the clinical treatment of this population and to relieve pressure on overburdened healthcare infrastructures in the process. In this setting, the SENSING-AI project's efforts are directed at developing and deploying an AI-powered digital health solution to aid in the adaptive self-management of individuals having long-term COVID-19, as well as the management and follow-up of this group by medical professionals [11].

The table shows for one month, in which data will be collected in real-time from wearable devices to identify any physiological or psychological issues that may arise. Wearable gadgets, such as Withings Scanwatches, will be distributed to patients to capture their biometric information. The information that must be gathered from each patient is organized in Table 1.

Table 1
Data obtained using the wearable device (A. Fuster-Casanovas *et al.*,) [11]

Biometric data	Types of data
Activity data	• Daily distance travelled in meters
	• Daily number of steps: list of steps per 4-5 minutes approximately
	• Total daily calories burned in kcal
Training data	• Calories or events in kcal
	• Distance of the event in meters
	• Heart rate: minimum, average, and maximum intensity in beats per minute
Sleep data	• The ratio of total sleep time or time spent in bed
	• Time spent awake in bed after falling asleep for the first time during the night in seconds
	• REM[a] sleep phase count
Cardiac data	• Atrial fibrillation was detected in a second during an ECG[b]
	• Detailed ECG signal in µV with 300 Hz sampling rate

REM[a] – rapid eye movement / ECG[b] - electrocardiogram

Conversational agents (CAs), also known as chatbots, use prepared rule-based replies or AI algorithms to replicate human discussions. They are progressively employed in health care, notably through cell phones. Note that smartphone-based and rule-based CAs in health care now need a conceptual foundation. We provide organized and specialized help for their design, development, assessment, as well as implementation to address this gap [12]. Despite their growing popularity, eHealth behaviour modification apps have low adherence and dropout rates. Therefore, virtual coach technology offers the latest ways to enhance this. However, these apps still do not meet everyone's needs. Thus, we need a deeper knowledge of people's requirements and how to meet them depending on users' real experiences and comments on envisioned situations [13].

Early identification and treatment are crucial. Smartphone-based and AI-supported primary care diabetic retinopathy (DR) screening pilots are underway [14]. For example, the UK health expenditure on diabetes and its consequences are small. Hence, Digital Health Interventions (DHIs) may help scale diabetic self-management and reduce complications. DHI engagement/effectiveness depends on tolerability (tailored treatments) and usability. Other than that, a user-centred DHI design may improve usability, reduce unexpected effects, and increase user engagement. For example, MyDiabetesIQ (MDIQ) utilizes AI to forecast diabetic complications by providing a user interface that lets people change lifestyle aspects to view their future hazards [15]. Similarly, Multiple Sclerosis (MS) diagnosis requires immunotherapy decisions and coping strategies. On the other hand, patients with Multiple Sclerosis (PwMS) inquired about how they could manage the illness. While MS statistics are complicated, keeping a healthy lifestyle (for instance, physical exercise as well as stress management) is essential to good aging and sustaining activity. Therefore, PwMS and MS specialists approve Levidex, which may help PwMS adjust to their diagnosis and adopt healthier habits [16].

2.2 Education

Learning analytics (LA) dashboarding and education providers' operationalization issues are examined in this study. The suggested dashboard is the first of its type in terms of the data range it combines and is presently being tested at a higher education institution. It provides actionable insights that help learners make informed changes to their learning habits [17]. Moreover, infographics simplify difficult information, spread scientific knowledge, and affect behaviour by defining goals. Infographics need careful consideration of layout, colours, typeface, and context. Online applications (Canva, Adobe, and Venngage) and AI programs now provide technical help for infographic creation [18].

Deep learning-based image analyses are growing in many sectors, and the development environment is easier. Our earlier work collected almost 9000 time-lapse photographs of juvenile Yesso scallops raised in lantern nets. However, only a handful were utilized for data analysis due to the difficulties of automatically processing many images [19]. Behaviour modification approaches affect an individual's behaviour via the Mechanism of Action (MoA). Modelling the MoA may improve digitally assisted behaviour modification treatments [20]. However, the Double Diamond approach and evidence-based behavioural science intervention development may provide equitable interventions [21]. Note that AI has revolutionized medical diagnosis and detection. In the digital age, children with stressful medical conditions have Deep Obsessive-Compulsive Disorder (DOCD). The Inception-V3 transfer learning Convolutional Neural Networks (CNN) model predicts aggressiveness levels better than the previous CNN model [22]. Motion recognition technology is commonly employed in sports posture analysis due to AI research. However, real-life light, angle, and distance interference prevents the model from focusing on human movement [23].

It was discovered that parents and family environment are important in autistic kid rehabilitation. Parents must be trained and included in intervention plan formulation [24]. In addition, health instructions and recommendations have been poorly followed due to a lack of monitoring and behaviour modification. The lack of distribution of online mobile application ads and websites urges them to follow state governors' stay-at-home directives [25]. Information and Communication Technologies (ICTs) and AI are utilized to identify geriatric depression early, even though depression is a medical condition. These devices detect depressive signs, including physical or online behaviour changes. Although physical as well as emotional changes indicating sadness in the elderly are frequently exhibited together, no study has examined them simultaneously. This research provides knowledge graph-based cyber–physical view (CPV)-based activity pattern recognition (KARE) to diagnose depression early [26].

2.3 Others Field

Smartphones are ubiquitous, widely used, and provide fast feedback, making them attractive for health-related behaviour modification interventions through mobile applications. Hence, consumers' opinions about such applications help bridge the gap between design goals as well as practical use. Likewise, a modified technology acceptance model (mTAM) is suggested in explaining the link between users' perspectives during AI-based smartphone app usage for healthy living and personalized nutrition, PROTEIN, as well as the mTAM constructs toward nutrition and physical activity behaviour change [27]. Other than that, the Typology of Interventions in Proximal Physical Micro-Environments (TIPPME) framework, which has been employed to define dark nudge-type alcohol industry techniques, was utilized to categorize AI and emerging technology uses [4].

The impact of COVID-19 non-pharmaceutical interventions (NPIs) on power systems is uncertain. During COVID-19, previous loads, timings, and meteorological factors may not be enough for load forecasting. As a consequence, this article provides an analytical approach to examine COVID-19's influence on power system functioning and day-ahead energy pricing in Ireland. Several Machine Learning (ML) techniques are employed to define alternative combinations of these explanatory characteristics and evaluate their performance to the literature's baseline scenario. Shapley Additive explanations (SHAP) are used to explain the best model, Light Gradient Boosted Machine, to identify how each feature affects anticipated outcomes. We discovered that mobility-related modifications and load-forecasting factors affect ML results [28]. NPIs affect power consumption as well as human behaviour during crises and may be utilized in load forecasting, aiding energy distributors, including policymakers [19]. Though AI and Reinforcement Learning (RL) have enhanced numerous fields,

economic policy formulation, mechanism design, and economics have not yet incorporated them [29]. Social planners, as well as agents, adapt to the AI Economist's two-level, deep RL paradigm for policy creation [20].

Internet and computer technologies have been increasingly applied in different sectors since the information era. Information technology is essential to existence as our industrial environment is evolving. Other than that, industrial usage of AI, IoT, and digital manufacturing is widespread. Modern industrial systems and media communication must include the new intelligent management idea of Industry 4.0. Hence, our study focuses on integrating intelligent technology under Industry 4.0 and realizing spatiotemporal modelling and analysis of human behaviour as well as behaviour characteristics in sports culture communication [30].

This research employs a Tavesian model of religious experience to develop a modest theorization about "fabulation," an embodied and emotional process, to explain how some modern AI and robotics designers and users regard experiences with these technologies to be spiritually "authorizing." Therefore, the user can make choices that influence their life or others depending on the AI or may have their spiritual needs fulfilled [31]. Due to the COVID-19 pandemic, societal acceptance of mobile-based fitness services increased. As a result, AI-based fitness services, which synergize with smartphones, are particularly popular. However, user experience evaluations of AI-based fitness programs are few [32]. The researcher suggests evaluating AI agents' capabilities and customer expectations throughout the user experience of AI-based fitness services to build future services. In building AI-based fitness services for health-related behaviour changes, it is necessary to consider both the short-term user experience as well as the long-term evolutionary viewpoint between the user and the system.

Table 2
AI agents' capabilities and customer expectations throughout the user experience of AI-based fitness services

Authors	Title	Year	Publication	Method
[7]	Measuring adherence, acceptability and likability of an artificial-intelligence-based, gamified phone application to improve the quality of dietary choices of adolescents in Ghana and Vietnam: Protocol of a randomized controlled pilot test	2022	Frontiers in Digital Health	This research protocol details the creation of new pilot studies to assess FRANI's practicality (acceptability, adherence, and usefulness) and its impact on teenagers' food choices in Ghana and Vietnam. The intervention group, which receives the complete version of FRANI, and the control group, which receives image recognition and nutritional evaluation, will each consist of 36 teenagers (12–18 years old).
[17]	Learning analytics dashboard: a tool for providing actionable insights to learners	2022	International Journal of Educational Technology in Higher Education	According to our analysis, most LA dashboards utilize descriptive analytics, but few utilize predictive analytics. Concerning the inadequacies in previously released dashboards, we offer a state-of-the-art dashboard that uses descriptive analytics and machine learning to provide predictive and prescriptive analytics.
[9]	A Smartphone Healthcare Application, CALO Mama Plus, to Promote Weight Loss: A Randomized Controlled Trial	2022	Nutrients	CALO Mama Plus was studied in Japanese people with obesity or overweight in this 3-month randomized controlled experiment. Participants were office employees between 20–65 years old, and 23–40 kg/m^2 were the main qualifying requirements. The main impact was a three-month change in body weight. Other than that,

				141 individuals were randomly allocated to control (n = 69) as well as intervention (n = 72) groups.
[10]	Bayesian multisource data integration for explainable brain-behaviour analysis	2022	Frontiers in Neuroscience	The suggested strategy was tested using simulated data and Adolescent Brain Cognitive Development research.
[11]	An Artificial Intelligence-Driven Digital Health Solution to Support Clinical Management of Patients with Long COVID-19: Protocol for a Prospective Multicenter Observational Study	2022	JMIR Research Protocols	This method combines psychometric and biometric data from 10 patients to train SENSING-AI cohort algorithms and prediction models. In addition, public health and lifestyle data registries as well as a retrospective cohort of anonymised clinical data from long-term COVID-19 patients will be reviewed.
[12]	Designing, Developing, Evaluating, and Implementing a Smartphone-Delivered, Rule-Based Conversational Agent (DISCOVER): Development of a Conceptual Framework	2022	JMIR mHealth and uHealth	This conceptual framework was developed using Jabareen's grounded theory technique. We reviewed the literature on healthcare CAs as well as mobile health intervention conceptual frameworks. To create the conceptual framework, we labelled, classified, integrated, and synthesized literature reviews. We created a CA and conducted a feasibility study using this framework.
[13]	Users' needs for a digital smoking cessation application and how to address them: A mixed-methods study	2022	PeerJ	In a five-session longitudinal study, 671 smokers engaged with a virtual coach. The virtual coach held a new smoking cessation or exercise preparation for each session. In the next session, participants gave activity feedback. Participants described their activity obstacles and motivators after five sessions.
[33]	Testing Behavioural Nudges and Prompts in Digital Courses for the Self-guided Treatment of Depression and Anxiety: Protocol for a 3-Arm Randomized Controlled Trial	2022	JMIR Research Protocols	Evolution Health's self-guided anxiety and depression courses will randomly assign new participants to one of three arms. The first control arm will have a member home page without behavioural nudges or reminders. A Tip-of-the-Day section comprising directive material will be on the member home page for the second arm. Arm 3 will include a Tip-of-the-Day section with social evidence and show bias on the member home page. Finally, a checklist will be on the third arm.
[14]	Determinants of the implementation of an artificial intelligence-supported device for the screening of diabetic retinopathy in primary care – a qualitative study	2022	Health Informatics Journal	Semi-structured telephone interviews were performed and examined using Mayring's qualitative analysis. Organizational personal attitude, financial considerations, time, education, technical demand, support, effect on the profession, and patient welfare are the primary implementation variables. A verified implementation approach, the behaviour change wheel, can move most determinants.
[27]	Users' Perspective on the AI-Based Smartphone PROTEIN	2022	Frontiers in Nutrition	Specifically, online survey data from 85 PROTEIN app users over two months were

	App for Personalized Nutrition and Healthy Living: A Modified Technology Acceptance Model (mTAM) Approach			subjected to regression analysis (RA) and confirmatory factor analysis (CFA) to determine the relationship of the mTAM constructs—perceived usefulness (PU), perceived novelty (PN), perceived ease of use (PEoU), perceived personalization (PP), usage intention (UI), as well as usage attitude (UA)—with user's behaviour change (BC), as shown by the acceptance/rejection of the app.
[8]	Evaluation of Dietary Management Using Artificial Intelligence and Human Interventions: Nonrandomized Controlled Trial	2022	JMIR Formative Research	This research analyses whether AI alone can support healthy habits or if human interventions are required to accomplish as well as maintain health-related behavioural change. AI and human treatments to promote dietary control were tested.
[4]	Use of artificial intelligence to enable dark nudges by transnational food and beverage companies: analysis of company documents	2022	Public Health Nutrition	Leading worldwide food and beverage corporations employ AI-enabled dark nudges to influence customer behaviour among twelve worldwide food and beverage leaders. Fifty-seven papers from eleven firms were transcribed.
[20]	Motivating Machines: The Potential of Modelling Motivation as MoA for Behaviour Change Systems	2022	Information (Switzerland)	To demonstrate how an explicit model of "motivation" and its parameters may personalize and adapt, an intervention scenario is simulated. Personalized and adaptive digital behaviour modification treatments may benefit from a computational depiction concerning motivation as a mechanism of action.
[29]	The AI Economist: Taxation policy design via two-level deep multiagent reinforcement learning	2022	Science Advances	Structured curriculum learning helps the AI Economist solve the difficult two-level, adaptive learning challenge. We test this approach in taxation. Here, in one-step economies, the AI Economist identifies the optimal tax policy according to economic theory.
[21]	Personalized Digital Health Communications to Increase COVID-19 Vaccination in Underserved Populations: A Double Diamond Approach to Behavioural Design	2022	Frontiers in Digital Health	We construct individualized behaviour change email and text messaging programs using evidence-based behavioural science to target individual obstacles for disadvantaged communities. Equitable interventions may be created by integrating design methods like the Double Diamond model with evidence-based behavioural science intervention creation. Personalizing and automating COVID-19 vaccine hurdles using behaviour change AI is also possible.
[31]	Fabulation, Machine Agents, and Spiritually Authorising Encounters	2022	Religions	The Spirituality Chatbot and Mindar, a robotic Buddhist priest, exemplify how this agency assumed a spiritual or religious valence when contextualized for the user.
[25]	An Online Advertising Intervention to Increase Adherence to stay-at-home-orders during the COVID-19	2022	International Journal of Applied Earth Observation	Individual-level mobile phone movement data tracked stay-at-home orders from April 29, 2020, to May 10, 2020. Our study team randomly allocated mobile devices in

	Pandemic: An Efficacy Trial Monitoring individual-level mobility data		and Geoinformation	five US locations to either get advertising from our research team encouraging consumers to remain at home to stay safe (intervention group) or regular advertisements from other marketers (control group).
[26]	Graph Representation Learning-Based Early Depression Detection Framework in Smart Home Environments	2022	Sensors	The knowledge graph (KG) provides cross-domain information and resolves semantic and grammatical heterogeneity to merge cyberspace as well as the real world in the KARE framework. It may also adapt to each older adult's activity habits. New machine learning algorithms are used in the KARE framework to do this.
[6]	Weight loss in a digital app-based diabetes prevention program powered by artificial intelligence	2022	Digital Health	Non-qualifiers (n = 223), as well as CDC qualifiers (n = 191) who submitted 12-month weigh-ins, were compared for weight reduction maintenance. For a secondary purpose, we abolished the 12-month weight criterion and utilized logistic regression to predict weight nadir in 3148 members.
[16]	"That would have been the perfect thing after diagnosis" development of a digital lifestyle management application in multiple sclerosis	2022	Therapeutic Advances in Neurological Disorders	Levidex, an MS-specific digital health program, was adapted from breast cancer survivors' lifestyle management software. Note that 15 PwMS and eight MS specialists evaluated feasibility. After that, a six-week pilot trial with eight PwMS was done. All participants completed a questionnaire on acceptability as well as practicability and a semi-structured telephone interview. After each test, Levidex was updated.
[32]	Designing AI Agent's Social Interaction Quality in AI-based Fitness Services as a Mediator	2022	Archives of Design Research	This research has two primary elements. The user experience was examined by examining case studies of AI-based fitness services and their technological applications. Second, user interviews and expert interviews examined AI agents' service journey skills.
[23]	A Deep Learning Method for Intelligent Analysis of Sports Training Postures	2022	Computational Intelligence and Neuroscience	A multiscale spatiotemporal graph convolution network-based motion training attitude analysis approach is proposed in this study to address the aforementioned issues. After constructing the skeleton's spatiotemporal picture, the convolution operation is conducted on it.
[18]	Designing Infographics: Visual Representations for Enhancing Education, Communication, and Scientific Research	2022	Journal of Korean Medical Science	Clinicians, researchers, and scientists need infographic design abilities. Examining infographics for public health education and scientific research is necessary to realize their full potential in the social media era.
[5]	Nonlinear Integrated Fuzzy Modelling to Predict Dynamic Occupant Environment	2022	Scientific Programming	By tracking human activity and analysing temperature, energy, and noise in the building, facility managers, as well as occupants, may get valuable insights for

	Comfort for Optimized Sustainability			planning, optimal space usage, as well as behavioural adjustments, leading to safer, happier, and more efficient buildings. Fuzzy modelling also applies human logic and reasoning using if-then rules based on system input-output data for model construction and training.
[24]	Evaluation and Analysis of the Intervention Effect of Systematic Parent Training Based on Computational Intelligence on Child Autism	2022	Computational and Mathematical Methods in Medicine	Statistics show that 1 in 100 children have autism, and everyone cherishes their rehabilitation. Parents and family environment are important in autistic kid rehabilitation. Parents must be trained and included in intervention plan formulation.
[22]	Designing a Deep Learning Hybrid Using CNN and Inception V3 Transfer Learning to Detect the Aggression Level of Deep Obsessive Compulsive Disorder in Children	2022	International Journal of Biology and Biomedical Engineering	MRI input is utilized in CNN to experiment with high-dimensional behaviour changes using picture datasets. Transfer Learning with Inception-V3 may statistically examine CNN misophonia level generalization to minimise overfitting. AI data augmentation can predict aggressiveness levels more accurately and with fewer errors than current approaches.
[30]	Research on Human Behaviour Modelling of Sports Culture Communication in Industrial 4.0 Intelligent Management	2022	Computational Intelligence and Neuroscience	Human temporal and spatial behaviour change in sports culture communication is modelled. Human behaviour trajectory is investigated by human behaviour recognition algorithm, data mining, behaviour quantitative analysis technique, as well as a behaviour feature model.
[28]	Human Mobility-Based Features to Analyse the Impact of COVID-19 on Power System Operation of Ireland	2022	IEEE Open Access Journal of Power and Energy	We use mobility, NPIs, and COVID-19 instances to enhance pandemic peak demand forecasts. Using different arrangements of these explanatory features, numerous ML techniques are implemented and contrasted to the literature's baseline scenario.
[19]	Semi-automatic recognition of juvenile scallops reared in lantern nets from time-lapse images using a deep-learning technique	2022	Plankton and Benthos Research	In this work, a deep learning approach called "semantic segmentation" was used to automatically recognize scallops in training and test photos from 195 time-lapse photographs. In test photos, the program correctly identified juvenile scallops. Furthermore, visual analysis of the other time-lapse photography verified the good accuracy of the algorithm.
[15]	User-Centered Design of a Novel Risk Prediction Behaviour Change Tool Augmented with an Artificial Intelligence Engine (MyDiabetesIQ): A Sociotechnical Systems Approach	2022	JMIR Human Factors	MDMW users were asked to focus groups on discussing their chances of acquiring diabetes-related problems and any hazards they anticipated from utilizing MDIQ. The results of the focus groups were used to create a prototype of the MDIQ interface, which was then put to the test by actual users. This method is known as "think aloud," and it involves having users speak out about their feelings as they carry out the tasks that have been prescribed. Focus group and think-aloud transcripts were

				thematically examined utilizing inductive and deductive analysis.
[3]	A unified health algorithm that teaches itself to improve health outcomes for every individual: How far into the future is it?	2022	Digital Health	Long-standing health and socioeconomic inequalities place many racial and ethnic minority groups at high risk of COVID-19 infection as well as death, according to the CDC. However, the virus detected flaws better than these physiologies' protectors.
[2]	An Artificial Intelligence Chatbot for Young People's Sexual and Reproductive Health in India (SnehAI): Instrumental Case Study	2022	Journal of Medical Internet Research	An instrumental case study enabled us to examine SnehAI's technology design, program execution, and user engagement. Our results were triangulated using qualitative insights and quantitative analytics data.

3. Conclusions

Future research into enhancing human flourishing across all demographics may take cues from this work. This review shows how AI can affect behaviour. These results should influence recommendations and resources for health, education, media, and other fields of research publishing in high-impact journals. These materials may inform people of how AI will influence behaviour. To enhance the capabilities of academics and enhance their chances of gaining global recognition via publication in indexed English-medium journals, it may be beneficial to examine the reviewers' feedback on claims of contribution in their reports.

A further study could access FRANI that can help scale nutrition data collecting and improve food choices for malnourished populations [7]. These skills generate confidence and meet increasing predictive analytics regulatory needs. It also shows how data-driven prescriptive analytics may be used in dashboards to give learners specific suggestions and enhance behavioural change [17]. Other than that, SnehAI is known as a creative, entertaining, and instructive initiative that helps vulnerable and hard-to-reach populations discuss sensitive and essential matters. SnehAI presents AI's social competence as having good potential. On the other side, CALO Mama Plus also helps people lose weight. In a different study, SENSING-AI collects high-quality daily data from long-term COVID-19 patients. In the present epidemic, supporting these patients and their healthcare workers is crucial [11]. Last but not least, it is about the DISCOVER conceptual framework that guides rule-based, smartphone-delivered CA development using published research. This paradigm must be tested in different healthcare settings and for different users to prove its efficacy. CAs should be studied for health care interventions, which include privacy and behaviour change as well as safety considerations.

In conclusion, the themes and suggestions provided can assist in creating health behaviour change AI or apps that satisfy people's requirements. Therefore, application component usability should be a designer's priority. For future research, the suggested dataset contains user characteristics and more free-text replies [13]. Note that the experiment's findings will teach the platform to identify user habits and provide stratified users with personalized engagement suggestions using AI [33].

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