

## Assessing the Role of Health Policy in Reducing Health Inequalities: Utilizing Behavioral Economics Techniques for Policy Design and Evaluation

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### KEYWORDS

Policy, Reducing, Health, Inequalities, Behavioral, Economics, Evaluation, Multilevel, Interventions, Evidence, Mental

### ABSTRACT

Disparities in health care are a major barrier to socio-economic development worldwide. Reducing these disparities is a central task of health care. This paper explores the feasibility of designing and measuring health policy that seeks to reduce health disparities using behavioral economics methods. This paper proposed, Multilevel Interventions with Evidence-Based Mental Health Strategy (MIE-MHA) is a flexible approach according to the findings. To better approach mental health disparities, this approach incorporates behavioral insights into targeted policy initiatives across socioeconomic levels. The advantages of this paper stem from the understanding and use of human behavioral models to deliver equitable and effective health care delivery, which must be met. Another challenge is the need for rigorous evaluation methods to evaluate the impact of policies. The application of MIE-MHA has been demonstrated in various healthcare settings using simulation studies. With the help of this research, policymakers working to reduce health disparities can gain insight into the potential success of these interventions in real-world settings with a helpful tool. Through the consideration of both the design and evaluation phases, this study makes a contribution to the formulation of health policies that are both more effective and more equitable.

### 1. Introduction

The assessment of the impact that health policy has on this rely is of the maximum importance because health disparities persist despite several efforts [1]. These disparities have the potential to be reduced via health regulations which might be based on behavioural economics [2]. These policies have the ability to influence person and collective behaviours through the usage of incentives, nudges, and individualised remedies [16]. The area of behavioural economics, which combines principles from economics and psychology, makes it possible for us to benefit a deeper information of the normally illogical health choice-making techniques that humans interact in [4].

On the other hand, the software of behavioural economics strategies in the process of formulating and comparing policies isn't devoid of challenges [5]. One of the maximum essential demanding situations is assuming out how to influence alternatives in a way that does not remove the sovereignty of people [12]. At the equal time that they maintain manipulate over their own choices, individuals must be capable of realize and reject nudges [17]. Additionally, there's the mission of accurately predicting human behavior, in addition to the truth that people from unique socioeconomic backgrounds have interaction with remedies in lots of methods [7]. To as it should be quantifying the long-term results of those rules on health disparities, complete evaluation frameworks are required. These frameworks need to be capable of consider a wide range of factors and any outcomes that have been no longer predicted [8]. The incorporation of behavioural economics into the layout of health policy, which can be challenging from an administrative and logistical viewpoint, requires collaboration across disciplines[3]. Experts within the fields of public health, psychology, sociology, and health economics are blanketed on this class [21]. The potential benefits of lowering health inequality via nicely-designed guidelines which can be informed with the aid of behavioural research have to make this topic a concern for researchers and policymakers, notwithstanding the limitations that may be encountered [10].

The complete evaluation and green execution of health fairness programmes can lead to the advent of a society that is both greater equitable and healthier. A complete behavioural economics framework for health policy planning is desired. Human behaviour insights inform health equity initiatives [6]. This entails identifying key behavioral traits and devising interventions to improve them, especially in disadvantaged groups[9]. This goal evaluates MIE-MHA's socioeconomic mental health disparities elimination potential. This objective shows MIE-MHA's health benefits through simulations and real-world evaluations. Assessing intervention scalability, sustainability, and health policy adaptability.

Improve methods for evaluating behavioural economics-based health policy [18]. Develop methods to assess these initiatives' short- and long-term health disparity effects. Politician judgements and health intervention design and execution benefit from accurate data. The final section of the research paper is outlined below: Using Behavioural Economics Techniques for Policy Design and Evaluation: Assessing the Role of Health Policy in Reducing Health Inequalities is the topic of Section II. This section III focuses on the Multilevel Interventions for Evidence-Based Mental Health Approach (MIE-MHA). Section of the comprehensive review included in Section IV are the results and comparisons to prior methods. Section V contains the Summary of Results.

## **2. Literature Review**

The purpose of this collection of research is to illustrate a variety of new and different approaches to improving public health through the use of systematic evaluation and focused interventions. V. J. McGowan et al. [22] synthesise research on the efficacy of place-based public health interventions (P-PHI) in high-income countries using systematic review methods [15]. Results will centre on gathering equitable data for future studies, and will cover topics such as physical health, health behaviours, social factors, and health inequalities [11]. Using focus groups and qualitative research with in-depth interviews (QR-DI), Belizan et al. [19] identified obstacles to the detection and treatment of hypertension and diabetes in Argentina. Primary healthcare settings can greatly benefit from behavioural interventions aimed at improving chronic illness management. One such intervention is the identification of barriers relating to the health system, providers, and users.

E. Hekler et al. [13] investigate precision health's social and behavioural science component by means of new recent technologies and research frameworks (RT&RF). The results will help with knowledge organisation, ethical research, and fair implementation, as well as with improving research-practice ties, understanding change mechanisms, and creating personalised interventions. The authors McGill et al. [14] categorised and described public health complex systems evaluation methodologies using critical review methods (CRM). Among the outcomes is the development of a framework that classifies various methods into the following: theorising, prediction, process assessment, effect evaluation, and further prediction. The goal is to produce strong evidence that would enhance health and decrease health inequities.

European policies about food, exercise, and sedentary lifestyles will be evaluated by the Policy Evaluation Network (PEN) under the direction of Lakerveld, J. et al. [20] The goals of this project are to develop a system to track health policies to ensure that they are inclusive and culturally responsive, as well as to determine whether policies have a positive effect on health disparities. These studies, taken as a whole, can help promote health equity and address different health challenges in a better way.

## **3. Methodology**

The suggested approach to reducing health inequalities employs tools from behavioural economics and policy design. This method seeks to create focused, persuasive therapies that are thoroughly considered for their efficacy by capitalizing on an understanding of human behavior. Therefore, information is continuously collected and simulation studies are done to make sure policies can adapt and achieve equal quality of life.

### ***Health Policy Intervention Framework***

The Framework for Prevention Intervention covers both primary and secondary preventive techniques against public health problems. The program prioritizes early detection and treatment through the use of financial policies, legislation, and educational initiatives that target health determinants. To reduce health injustices, this two-pronged approach utilizes behavioral economics to both create effective policies and evaluate them.

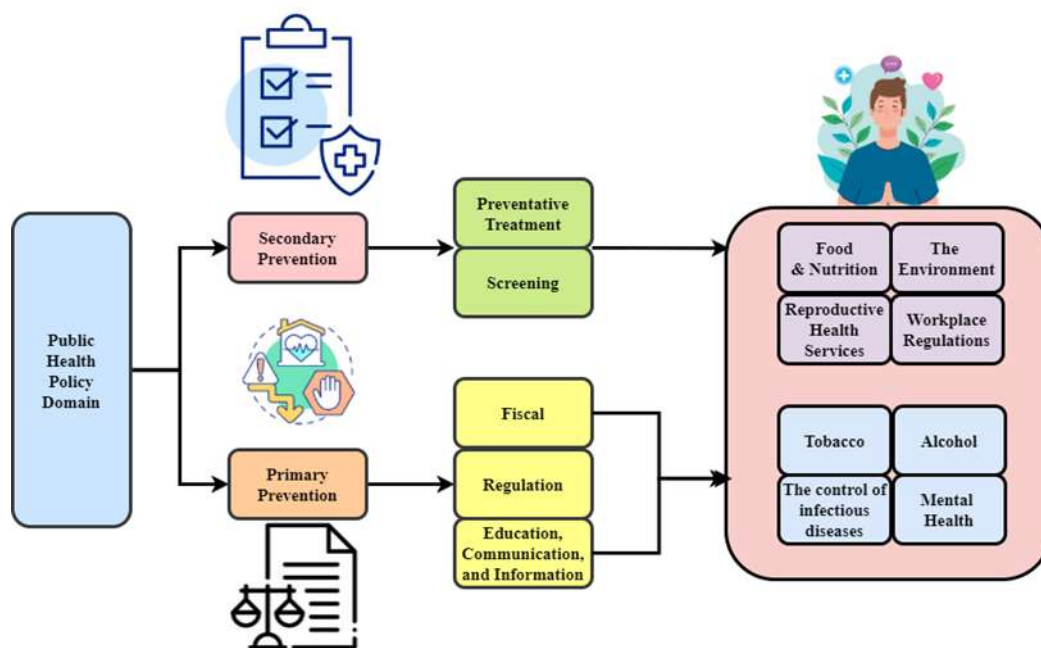


Figure 1. Health Policy Intervention Framework

Figure 1 presents the Full Framework for Health Policy Initiatives to Reduce Health Inequities. Primary and secondary prevention approaches combine in this model for addressing various public health problems. The key areas of primary prevention come under fiscal policy, regulation and transfer of information while environmental determinants include workplace norms & regulations reproductive care services food & nutrition management infectious diseases among other extensive determinants of health. However, primary prevention focuses on preventing these underlying causes from becoming health problems at all. Conversely, Secondary prevention deals mainly with screening as well as preventive therapy where certain illnesses are identified early or their risk assessed prior to worsening. For instance, a population-based level of intervention could identify tobacco use or alcohol consumption as immediate risks related to mental wellness concerns like depression or anxiety disorders. Yet these twin-pronged approaches that derive from behavioural economic principles still have population level public policies founded on behavioural patterns within particular communities as an essential starting point. We may therefore amend these acts by applying our knowledge of human behavior so that they can eliminate disparities in the outcomes of health if we will ever know what drives people’s actions. To address different socio-economic levels targeting mental health equity, this approach is driven by MIE-MHA which uses behavioral insights.

### **Developing and evaluating health policies**

The first steps in developing and evaluating health policies include cataloging significant health disparities and using behavioural economics tools to guide policymaking. After implementing them, data gathering and impact assessments should be conducted systematically for policies. Continuous monitoring and improvement keep policies effective and adaptable..

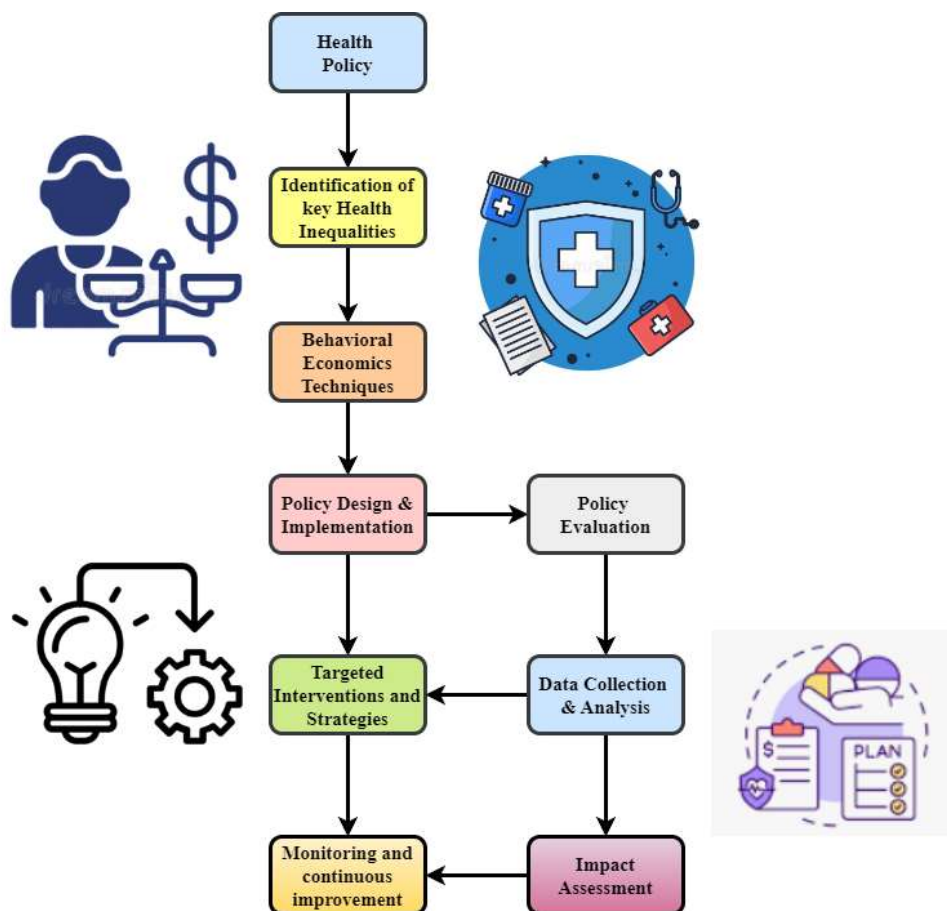


Figure 2. Process Evaluation and Design of Health Policy

To reduce health inequities, a systematic procedure is shown in Figure 2 for developing and accessing health policies. Making a health policy is the first step since it lays the groundwork for all that comes after it. Finding the most significant health disparities in the community is the first order of business. During this critical stage, policies are fine-tuned to address the most serious inequalities. After these disparities have been established, behavioral economics methods are used to comprehend and foretell how people may react to different solutions. After that, these insights are used to create and execute policies. At this point, the goal is to figure out which behaviors the target demographic does and how to make treatments that will have the best chance of working. Next, conduct an in-depth analysis of the policies put in place to gauge their initial impact and efficacy. Important to this process is the gathering and analysis of data, which will provide the proof required to assess the results. To evaluate the effects of the interventions in the actual world, this data-driven method is useful. To determine if the policies were successful in lowering health inequities, the next stage is to conduct an impact evaluation.

### **Health Policy Design Behavioral Economics**

Health policy that incorporates behavioral economics seeks to improve health treatments by drawing on knowledge about human behavior. This could lead to better policy enforcement as well as healthier lifestyle choices because people have deeper understanding of decision-making processes. For instance, this method may help design implement evaluate or new public health programs that are focused on improving overall outcomes and reducing inequalities between rich and poor socioeconomic groups by using an approach whereby information from economic research is combined with insights gained from studies in sociology and anthropology.



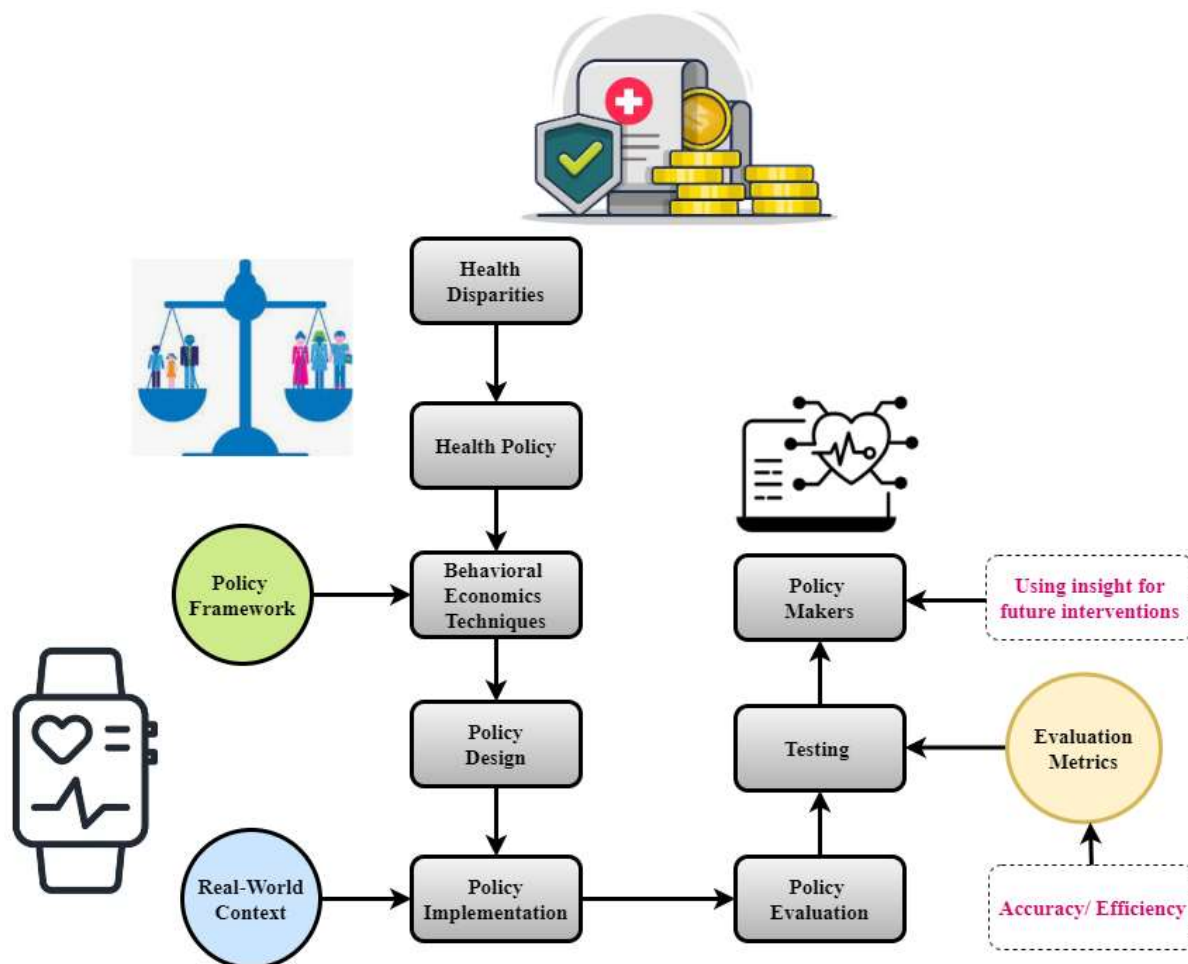


Figure 3. Health Policy Design through Behavioural Economics

Behavioural economics, as shown in Figure 3, can be used to develop health policies that address health equity. First, it is crucial to determine where healthcare disparities exist so that we can design policies around the underlying causes. In addition, these policies are based on behavioral economics which explains how individuals choose their own personal healthcare needs. This calls for making rules that would steer behavior towards desired objectives effectively after being aware of them all along. Hence, such behavioural conclusions are taken up by policy designs resulting in feasible strategies likely to succeed within real-life situations unlike those currently available for use. Thereafter, there follows an implementation of well-structured policies accounting for changing dynamics and actual logistic hurdles of the actual world. Here is where data collection and analysis techniques come into play so as to verify whether our policies are performing as planned or not. Besides, impact measurement can be done through evaluation metrics. Policies are tested and adjusted through simulation studies up until full-scale implementation. Politicians would undertake such studies so that they could anticipate possible results and make any changes necessary on their courses of action. Designing, implementing, evaluating, and refining policies is an iterative process aimed at continuous improvement. Health policymakers use findings from appraisal and modeling studies to enhance interventions that effectively reduce disparities in health status which lead to equitable outcomes in health care system..

### Assessment of the suggested approach based on a mathematical equation indicating the viability

One way to evaluate the proposed strategy is to look at how much of an impact the policies have on reducing health inequalities. Health outcomes, adherence to therapy, and access to healthcare are some of the important indicators that policymakers might use to measure the success of their policies.

The approach's potential to achieve its objectives may be determined by constant evaluation and analysis of these variables.

$$N(D) = \frac{1}{CQ} + \int_{=c}^c \frac{C^{-\alpha 2}}{W - \vartheta \rho} = \alpha \int_0^\Delta iw^{-hw-\frac{1}{2}}fr \quad (1)$$

Equation 1 takes a multi-faceted approach to evaluate the effects of health strategy, similar to the MIE-MHA technique  $N(D)$ , and looks to be difficult. It probably incorporates factors pertaining  $\alpha$  to material considerations  $(\frac{C^{-\alpha 2}}{W-\vartheta\rho})$ , emotional reactions  $\frac{1}{CQ}$  and  $W - \vartheta\rho$ , and indications of policy success  $hw - \frac{1}{2}$ .

$$\left[ \int_0^{3z} \int_0^{2r} kg^{-iq2}st + nl + g\varepsilon \right]^{\frac{1}{2}} = \left[ \tau\varphi \int_0^\omega nr + (-\omega w) \right]^{\frac{1}{2}} \quad (2)$$

Equation 2 represents the incorporation of different socioeconomic elements and behavioral reactions  $nr$  into health policy frameworks, Comparable to the MIE-MHA strategy's layers of interventions, this intricate formulation captures  $nl$  the multiple interactions  $g\varepsilon$  between variables  $kg^{-iq2}$ ,  $\tau\varphi$ , and  $-\omega w$ , showing ways behavioral insights may guide and assess policy efficacy in decreasing gaps in health.

$$\int_{-\alpha}^\alpha tk^{-cfs^2}tx = \left[ \int_{-x}^t dxg^{-lqf}tg + \int_{-1}^1 st + cae^{-sxx} - gt \right]^{\frac{1}{2}} \quad (3)$$

The given integral equation 4 Using the MIE-MHA paradigm,  $tk^{-cfs^2}$  might stand for the multi-layered  $tx$  complexity of health treatments. It encompasses several components  $dxg^{-lqf}$  and their interplay  $tg$ , illuminating how  $st$  diverse socioeconomic conditions  $cae^{-sxx}$  and behavioral reactions  $gt$  could affect the effects of policies.

$$(f_1c + z_2) = \frac{h_{z_1}k + i_2ac^2 - (z_1h_f + s_0b(t + 1) + h_2st(q + 1))}{(h_g(n + 1))^2} \quad (4)$$

The equation 4 represents the intricate interactions between socio-economic variables  $h_{z_1}k$ ,  $i_2ac^2$ ,  $f_1c + z_2$ . Behavioural economics approaches analyses, though  $z_1h_f$  and  $s_0b(t + 1)$  reflect beginning circumstances or baseline factors. This is demonstrated by the moderating impact of policy interventions  $h_2st(q + 1)$  across socio-economic levels, which is denoted by  $(h_g(n + 1))^2$ .

$$(\tau 1(c - 1) + z_1) = \frac{(exr(cv) + ift(Gq)) \rightarrow ((qz, xr(KL - tq)))}{cl(o - 1)} \quad (5)$$

Equation 5 Economic and social factors impacting mental health  $c - 1$  outcomes are represented by  $ift(Gq)$  and  $exr(cv)$ , though  $z_1$  and  $\tau 1$  maybe seen as coefficients expressing behavioral insights. A targeted intervention result incorporating these variables is indicated by the phrase  $(qz, xr(KL - tq))$  and a leveling factor taking socio-economic levels into account is demonstrated by the denominator  $cl(o - 1)$ .

$$C(cz) = \int_0^c hx(yw + 2) - hi(w - 1)xs = \frac{(xs - vz)}{da} - \left( \frac{d}{tr - sx} \right) + \left( 1 - \frac{d}{gs} \right) \quad (6)$$

The above equation 6 seems intricate, but it fits logically with the MIE-MHA approach to health policy. This is probably a mathematical model  $C(cz)$  that incorporates  $(w - 1)$ several variables  $(hx, hi, xs, vz, da, tr, (\frac{d}{tr-sx}))$  to mimic results affected  $1 - \frac{d}{gs}$  by behavioral economics concepts. By taking into

consideration behavioral reactions and socio-economic dynamics.

$$st = \frac{1}{2} V Iq + ztb_1 = \left( i - O \left( K + \frac{tx}{bq} \right) hi_l \right) + (lq + 1) \quad (7)$$

This Equation 7 may indicate accuracy analysis for a variable  $V$ , personal health results  $Iq$ , and reaction times  $ztb_1$ . The influence of the intervention on various socio-economic levels, affecting outcomes  $lq + 1$  under various policy scenarios, might be represented by the concept of  $-O \left( K + \frac{tx}{bq} \right) hi_l$ .

$$j(s, t) = \sum_{q=0}^{+\partial} \frac{o + (zq) - (tr)}{qg!} + (d + xr)^m + (qa - vx) - (gst) = \sum_{n=0}^w (r - q) \quad (8)$$

The Equation 8 representation is used for modeling or assessing treatments  $j(s, t)$  the MIE-MHA method. It may include economic or social factors  $\frac{o+(zq)-(tr)}{qg!}$  into its operations. The multidimensional efficiency analysis proposed  $d + xr$  by MIE-MHA to promote policy efficacy and equality is echoed  $(d + xr)^m$  by this model, which presumably helps in evaluating the influence of health policies on inequalities ( $gst$ ) by incorporating diverse  $r - q$  economic status and behavioral responses.

The suggested approach employs behavioural economics as a framework for health policy development, to develop policies that address health disparities. Effective rule making requires detailed examination and continued data analysis to ensure their efficiency and adaptability. Hence, there should be incremental changes that incorporate practical behavioral knowledge in real time so as to achieve justifiable health outcomes

#### 4. Results and discussion

Healthcare policy interventions are being studied by behavioural economists to understand how social and cognitive biases affect health decisions. Governments can reduce health disparities by studying intervention efficacy and accuracy. This two-pronged analysis examines cost-effective ways to encourage healthy habits across socioeconomic groups for everyone. To develop an accessible, high-quality healthcare system, these analyses must be addressed and answered.

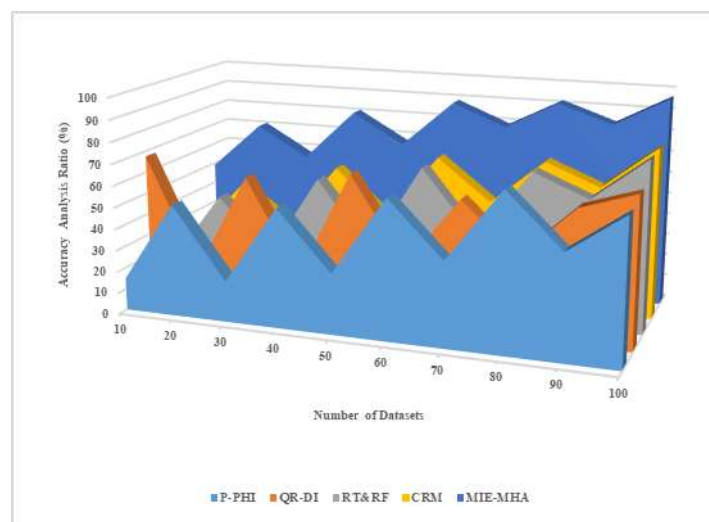


Figure. 4 Accuracy Analysis

In the above figure 4, by analysing intervention accuracy and efficiency, behavioural economics can show how health policy might minimise health inequities. Behavioural economics explains how social and cognitive biases affect health decisions. These findings can inform health programmes that

encourage good behaviour and eliminate inequality. Their validity depends on simulations, observational studies, and RCTs. It is possible for us to determine which interventions artworks are enjoyable in various socioeconomic circumstances by utilising those tools. There are challenges to overcome to ensure interventions are honest and do not aggravate health inequities. Programming for different groups must address poverty, training, and healthcare. Rules must be checked and altered to reflect new records and behaviour produces 96.8%. Behavioural economics-based health coverage activities can reduce health disparities if done, reviewed, and fair. This concept creates a more inclusive healthcare system, improving health outcomes.

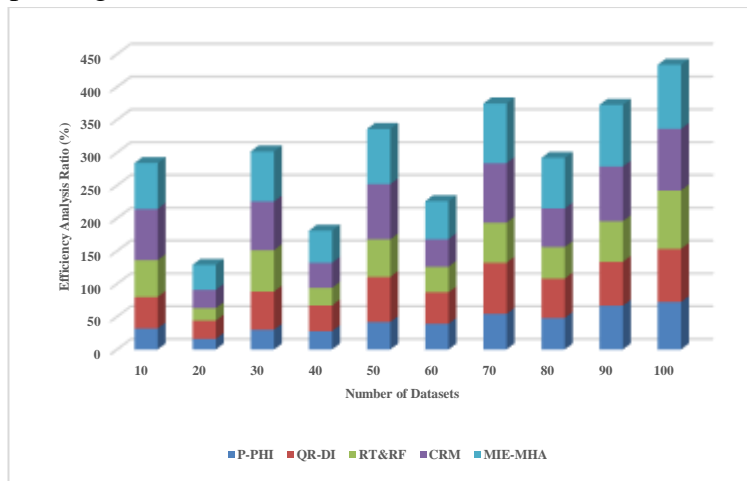


Figure. 5 Efficiency Analysis

In the above figure 5, health coverage efficiency analysis decreases health inequities using behavioural economics to measure resource consumption to meet health goals. Behavioural economics shows how social and cognitive biases affect health. With this understanding, ideas can be developed to gently encourage healthy habits without breaking the bank. Fee-gain and cost-effectiveness evaluations compare funding to health benefits to assess project efficiency. Performance evaluation concerns include preventing health inequities with equitable and cost-effective solutions. To achieve this, guidelines must be contextually and socioeconomically relevant, including accessibility, cultural relevance, and resource availability. Efficiency demands ongoing monitoring and adaptive regulatory management that allows real-time modifications to new records and behaviours produces 98.2%. Finally, behavioural economics improves health equity project design and evaluation. Equitable and fee-effective policies can increase health and social justice over time. Behavioural economics can assess health policy to eliminate health disparities. Implementation requires cultural sensitivity, accessibility, and resources. Social justice and health equity can come from behavioural economics-based health policy evaluation and design.

### 5. Conclusion and future scope

By highlighting the revolutionary capacity of behavioural economics in this discipline, the supplied research highlights the important function of health coverage in lowering health inequities. A potential approach to deal with intellectual health inequities throughout socio-economic is the MIE-MHA, which incorporates behavioural insights into coverage layout. The observe that there are sure obstacles to conquer whilst crafting guidelines to account for specific forms of behaviour and that thorough evaluation processes are required to decide the efficacy of regulations. Policymakers now have a beneficial device in simulation studies that display how MIE-MHA works in distinctive health policy eventualities, allowing them to expect how these interventions will paintings in practice. With the information gained from this observe, lawmakers can be able to craft health policies which might be each powerful and fair, consequently one can have a fine impact on society and the financial system.



By delving into the layout and assessment degrees, this study contributes to health policy by way of imparting an extra unique picture of how to use behavioural economics to lessen health inequalities. Continued exploration and development of behaviourally knowledgeable health rules is essential, as a hit software can result in healthier populations and a more equitable distribution of health sources. Continual innovation and evaluation in health policy design are advocated by this study, that's a foundational step in the direction of extra powerful and equitable health interventions.

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