International Journal of Scientific and Academic Research (IJSAR)

E-ISSN : 2583-0279

Vol. 5 (3) June - 2025

DOI: 10.54756/IJSAR.2025.3.1

The Placebo Effect: Decoding the Mind-Body Connection on Selected Female Participants in Sharjah

Marah B. Sallouh, Zainab U. Al Mizban, Shams A. Al Edreesi

Sharjah American International School

Sharjah

United Arab Emirates

ABSTRACT

Research on the validity of the placebo effect in clinical settings with medical professionals is well established; however, less is known about how its success rate varies and to what extent perceived relief is influenced when professionalism and expertise are eliminated, and trust in the provider becomes the primary factor. This study investigates the efficacy of the placebo effect when typical clinical conditions—namely provider expertise and status—are absent. Specifically, it examines the limitations of the placebo effect when inert and active medications are administered by non-medical individuals, such as peers, who are trusted to varying degrees by the participants. Both a quantitative and qualitative approach was used; the participants were categorized into low trust and high trust groups based on a scenario-based questionnaire. They later received either an active or placebo medication upon request and reported their perceived relief and feedback via a follow-up questionnaire. A dual-method approach, combining statistical testing (paired and independent t-tests) for quantitative data and thematic analysis for qualitative responses, provided a comprehensive understanding of how trust influences the placebo effect in a non-medical experimental setting. Results indicated that participants with high trust in the provider exhibited greater positive responses to both real and placebo drugs, whereas those with low trust were more likely to report no improvement or adverse effects. These findings suggest that trust—whether in professional qualifications or social bonds—plays a key role in enhancing the placebo effect.

Keywords: High Trust Group, Inert and Active Drug, Low Trust Group, Placebo Effect, Role of Trust, Non-Clinical Setting.

1. INTRODUCTION

The human mind is a powerful entity as it has the ability to control the course of reality regardless of whether falsehood is acknowledged or not (Howard E. LeWine, 2024). This is especially true when it comes to clinical testing as it has been proven that subjects who receive active medical drugs and those who receive “dummy” or inactive medication whilst being told otherwise both experienced positive outcomes and regression of harmful symptoms (Victoria State Government, 2021). Whilst it is true that other factors do contribute to the results of such trials, the main principle still resides believing that certain interventions may yield favorable effects can bring outcomes closer to expectations (Daniel Allan, 2022).

Various variables can control the magnitude of the Placebo effect - the change in apparent symptoms as a result of fake treatments - like the distinctions of the placebo, the degree of trust between doctors and patients, and the attitude of the participant (Victoria State Government, 2021). While “mind over matter” is upright, all has its limits and the same should be expected when discussing phenomena such as the placebo effect; while it is has been evident that relief can be experienced from symptoms like stress induced insomnia, fatigue and nausea due to cancer treatment, and precepted pain, it is still important to maintain a pragmatic view when studying the placebo effect as it

cannot, for instance, lower cholesterol or shrink tumors (Howard E. LeWine, 2024). Since the placebo effect can be impacted by multiple mechanisms, we can assess the level of its influence through altering one of its foundational aspects thus giving a more comprehensive understanding of the specific aspect's psychological role in addition to other domains (Victoria State Government, 2021).

1.1 Statement of the Problem

Previous studies concerning the placebo effect usually revolve around clinical trials since it is prominently used to test the efficacy of newly developed drugs (Gupta U, Verma M., 2013). A 2014 study explored how drug labeling influenced episodic migraines in a group of 66 participants; the results showed that when Maxalt - migraine medication - was labeled as a placebo, it was found to offer similar relief to a placebo labeled as Maxalt (medically reviewed by Timothy J. Legg— Written by Jill Seladi-Schulman, 2020). Another study conducted in 2018 investigated how a placebo compares to treatment when combating fatigue in cancer survivors; both study groups experienced notable improved symptoms (medically reviewed by Timothy J. Legg— Written by Jill Seladi-Schulman, 2020). In both studies, the placebo was given by researchers but there is limited data about the strength of the placebo effect if a certain product was given by a non-expert.

1.2 Objectives of the Study

The study aims to test whether the placebo effect will play a role in the outcomes of research participants when stereotypical testing conditions are not applied, namely the expertise and status of the provider. The intended objectives of the study are to acknowledge the limitations of the placebo effect when selected medications, cosmetics, and other products are advised or given by contributors outside the medical field, specifically peers, acquaintances, and other familiar figures who are trusted to varying degrees by the participants. The goal is to identify the psychological and social factors that influence responses to placebo.

1.3 Research Questions

The researchers aim to answer the following questions:

- What percentage of participants, with varying levels of trust in researchers, exhibit a response to placebo when administered by non-medical professionals, such as school peers and close acquaintances? Specifically comparing responses between high and low trust levels.
- Do participants who receive placebo from highly trusted non-medical professionals feel inclined to hinder the reality of their response to themselves and to others considering the social relation between the provider and participant?
- How do varying levels of trust in non-medical professionals influence the strength and duration of the placebo effect in participants?

1.4 Significance of the Study

The placebo effect is a theory that holds the scientific interest of many researchers and scientists (Wolf, 1950, Moerman, 1997, Shapiro and Shapiro, 1997), where conducting experiments, in the field of neuroscience, psychology, and medicine, is held to apprehend the psychological changes because of a tenacious belief in a treatment's efficacy. This scientific domain extends its limits to reach the medical industry, assisting in the creation of medications that lack a therapeutic effect, whereas individuals start to activate their natural treatment mechanisms through manipulation of the brain to reduce symptoms of illnesses and diseases. The general public, ordinary people, might view the practice of this scientific concept as unethical or illegal if failed to aim at the big picture of this intervention and to acknowledge the positive usages of it: fostering the mind-body connection, producing effective drugs by clinical trials, encouraging self-strength to encounter health obstacles.

1.5 Structure of the study

The first chapter states the problem encountered as studying the placebo effect. The chapter additionally conveys multiple factors: objectives and aims of the study, possible research questions, significance of the study, and lastly the structure and format of the study.

DOI: 10.54756/IJSAR.2025.3.1

2. LITERATURE REVIEW

Throughout history, research has extensively examined the placebo effect administered by medical professionals, employing various experimental designs and methodologies while consistently emphasizing the role of trust in the relationship between subjects and medical experimenters. However, contemporary studies have yet to explore the psychological factors that influence the placebo effect, particularly the impact of trust when non-medical professionals administer active or inert treatments. This research aims to investigate this specific gap by analyzing how subjects with varying levels of trust respond differently to such interventions.

2.1 Historical Perspective

The formation of the term "Placebo" can be traced back to religious origins, specifically to the Hebrew Bible in the 14th century (Craen, Kaptchuk, Tijssen & Kleijnen, 1999; Kerr, Milne, & Kaptchuk, 2008; Shapiro, 1964; Damien, 2018). In Latin, "placebo" means "I shall please," as it was widely used by funeral mourners. The mourners expressed their tribulation by wailing "Placebo Domino in regione vivorum" (Psalm 116, 9th verse), which in modern English translates to "I shall please the Lord in the land of the living" (Craen, Kaptchuk, Tijssen & Kleijnen, 1999).

2.1.1 The Emergence of Placebo in Medicine

In the medical field, the word "placebo" emerged in the mid to late 18th century through the work of Scottish physician William Cullen. Recognizing the psychological impact of medical treatment and the significance of the doctor-patient relationship, Cullen acknowledged that the brain could be positively influenced by providing something, whether pharmaceutical or not. Cullen used the term "placebo" to describe this method of treatment, believing in its power to heal (Finniss, 2018).

2.1.2 Franz Mesmer and Psychological Healing

Despite the scepticism he faced and the disapproval of his unscientific theory of animal magnetism, Franz Mesmer, a physician with multiple doctorates, demonstrated the power of psychological and faith healing. His therapy sessions, which excluded any medical procedures, relying solely on rituals and an elaborate atmosphere, yielded significant results (Shapiro, 1997). While Mesmer attributed his success to what he calls “animal magnetism”, it was primarily due to psychological factors, in other words, The Placebo Effect.

2.1.3 The First Placebo-Controlled Trial

In 1801, John Haygarth, a British physician, conducted the first placebo-controlled trial. He tested five individuals on the effectiveness of metallic tractors, believed to cure diseases through electromagnetic influence, and imitated wooden tractors. He treated five patients first with the imitation wooden tractors and then with the real metal ones, finding identical results: four out of five patients reported relief in both cases (Craen, Kaptchuk, Tijssen & Kleijnen, 1999).

2.1.4 The Concept of Placebo Control

By the arrival of the 1800s, research and experiments took place to investigate the “Placebo-Control.” The term was approached in the year 1863, by an American physicist, Austin Flist, who conducted a small testing for the treatment of articular rheumatism, a musculoskeletal disorder. He included a placebo control, a harmless inactive substance, which was a dilute remedy in this case, as he used it to evaluate the actual effectivity of the treatment. Flint claimed that the placebo provided a relief to the symptoms, without directly impacting the disease process (de Craen et al., 1999; Kaptchuk, 1998; Finniss, 2018). Flint’s work established a foundation for other medical trials in the 20th century, even though it contrasted the views that associated the placebo effect with imagination and physiological factors.

2.1.5 Early Blinded Trials

Further experiments were explored, such as the “blinded method” of 1913–1918 by Adolf Bingel, where an antitoxin that cures diphtheria, a bacterial infection, was tested against a normal serum on 1,000 subjects. Adolf relied on blind assessors, examiners who did not know which treatment was given to the patients, to draw an accurate conclusion of the results, controlling the psychosocial factors that could affect the treatment outcome (Finniss, 2018). In other words, if the assessors knew who took the replacement treatment, they would most likely, whether consciously or subconsciously, rate the outcomes more favourably for that group. However, it wasn’t clearly cited whether the patients knew what treatment they were receiving.

DOI: 10.54756/IJSAR.2025.3.1

2.1.6 The Double-Blinded Placebo-Controlled Trial

To improve accuracy, Drs. Gold, a pioneer of digitalis for cardiac failure, and his colleagues, Kwitt and Otto, developed the placebo-controlled double-blinded trial, where neither the researchers nor the patients knew who was in the active treatment group or the placebo group, to test drugs (Samuel J., 2012). This paradigm established a foundation for current clinical methodology.

2.1.7 Shift to Psychological Approaches

It was a common ideology to mainly focus on the placebo as a tool to cure; however, the researcher W. R. Houston shifted the focus toward a psychological approach, referring to the doctor-patient relationship as a "dynamic power" in his book The Doctor Himself as a Therapeutic Agent (Houston, 1938). Houston argued in his publication that the relationship between a doctor and a patient had a great therapeutic effect on the treatment process. He emphasized the power of a strong doctor-patient bond rather than simply relying on a placebo to ease the healing process and enhance treatment outcomes.

2.1.8 Quantifying the Placebo Effect

Research conducted by Lasagna and her colleagues was the first to quantify placebo effects and explore psychological factors influencing patients (Lasagna, Mosteller, von Felsinger, & Beecher, 1954; Finniss, 2018). In this study, 162 patients with post-operative pain were given alternating doses of placebo analgesia (pain relief) and morphine. The goal of the experiment was to assess the effective magnitude of analgesia compared to morphine. If pain was reduced by 50%, the placebo response was assumed to be successful. Fourteen percent of the patients consistently responded to the placebo, while 55% had inconsistent responses. Multiple psycho-behavioural factors influenced the placebo response of the patients. Specifically, patients with higher somatic symptoms, anxiety levels, and trust in the hospital developed a stronger placebo response (Finniss, 2018).

2.1.9 Active Placebo Action Study

At a later date, in 1964, a study known as "active placebo action" was conducted by Egbert and his colleagues to further explore the doctor-patient relationship introduced earlier in the history of the placebo effect (Egbert, Battit, Welch, & Bartlett, 1964). Egbert's team analyzed the change in the magnitude of morphine intake in patients undergoing major abdominal surgery, who were treated with special care before and after the operation, in comparison to patients who received standard care. Despite the absence of an actual placebo, the study produced astonishing results. In the special treatment group, morphine intake was reduced by 30–50%, highlighting the therapeutic value of doctor-patient interactions and suggesting that psychological factors play a significant role in the healing process of the patient (Finniss, 2018).

2.1.10 The Powerful Placebo

The Powerful Placebo, published by Henry K. Beecher, marked both a beginning and an end (Beecher, 1955, 1959). It was the beginning of the rise of clinical trials and the end of doubts questioning the reality of the placebo effect. This publication provided official evidence to support the "power" of the placebo effect by analysing data from 15 placebo-controlled, and double-blinded clinical trials. Beecher estimated the average placebo effect to be 35.2% (ranging from 21–58%), proving its worth for further investigation and establishing a foundation for future trials (Finniss, 2018).

2.2 Physicians as an Ingredient

Modern day medicine is heavily reliant on pharmacology and other newly developed methods of diagnosis and prognosis that were not identified nor utilized in the past as medicine was originally associated with magic (W. R. HOUSTON, F.A.C.P., 1938, p. 1417). One way or another, doctors used placebos to satisfy patient urge for active intervention and intentionally selected "words of cheer and comfort sought to please the patient," according to Houston (1938, p.1417). The meaning model appears to support such principle demonstrating that human cognition signifies and gauges the extent to which "various external stimuli are "meaningful"," consequently firing up the responsible pathway(s) whether "neurological, immunological, or biochemical" to express signs of the so-called placebo effect (Brody, 1997, p.83-84).

Of these external factors is the faith held by the doctor and the faith of the patient sourced by the doctor; this faith comes in direct correlation to the effectiveness of the given placebos. This claim is evidenced by the numerous ancient healing concoctions such as "the herbs of the Indians, the pharmacopeias of the Orient, [and] a large part of the

DOI: 10.54756/IJSAR.2025.3.1

contents of our older books on medicine" that were proven inert and heavily reliant on doctors' faith in terms of functionality (W. R. HOUSTON, F.A.C.P., 1938, p. 1418).

The element of faith mentioned by Houston changes the patient's view on the illness ordeal into a more optimistic outlook, or a more positive "meaning" as Brody states. In simple terms, positive "meaning" yields "a positive placebo response" where "meaning" can be elucidated by the following three constituents: "providing an understandable and satisfying explanation of the illness; demonstrating care and concern; and holding out an enhanced promise of mastery or control over the symptoms" (Brody, 1997, p.79).

Considering that the stated factors are usually delivered via physicians, a physician's proficiency in healing can be scaled by their fluency in the art of placebo (alongside their breadth of medical knowledge); "the ideal physician" is therefore "a walking placebo" (Brody, 1997, p.77). In the perspective of a patient, the healing process begins with a visit to the doctor when anxiety is faced with reassurance (Margo, 1999, p.33); this raises the question, what if the element of medical expertise was omitted? How will that change the "meaning" of a stimulus and to what degree?

2.3 Intrinsic Determinants of the Placebo Response

The basis of the effectiveness of a placebo does not lie in the constituents of the drug or medium itself but rather the associated "context effects" – factors that impact the patient response besides the drug : the characteristics or attributes of the patient, clinician, or treatment, the "healthcare setting", and the dynamic between the practitioner and patient (Blasi, Harkness, Ernst, Georgiou, & Kleijnen, 2001, p.757-758). In order to properly exploit the benefits observed by the placebo effect, one must fully comprehend the strings that manipulate desirable outcomes allowing for complete immersion into the mind-body connection.

2.3.1 Neural Systems

The effect of "expectation and reward" has been mentioned countless times across papers regarding the placebo effect, namely its link to dopamine release (Anderson, T. Stebbins, 2020, p.30). In an experiment conducted in 2001, it was found that Parkinson's disease patients experienced a positive surge in levels of dopamine after receiving either placebo or an active drug; this increase in dopamine is linked to "expectation of reward" which in this case is "therapeutic benefit". It was concluded "that the level of expectation may determine experience"- those who are "familiar" to the effect of the active drug tend to expect more positive outcomes and thus release greater amounts of dopamine (de la Fuente-Fernandez, Ruth, Sossi, Calne, & Stoessl, 2001, p.1164-1165).

2.3.2 Personality

The realm of personalities and its related complexities make deducing a correlation between character and placebo appear like a haze as evidenced by the inconsistencies in studies. However, understanding how the traits of participants might deviate final experimental outcomes can ensure a higher degree of accuracy in clinical trials as well as improve medical practice and patient support (Ernst & Herxheimer, 1996).

2.3.3 Optimism and Pessimism

Geers and colleagues (2005) studied the contrasts and similarities between optimists and pessimists when assigned one of three conditions: ingesting an active pill that makes one "feel unpleasant" (deceptive-expectation group), ingesting a pill that has an equal chance of being active or a placebo (conditional-expectation group), or ingesting an inactive pill (control group) (Geers, Helfer, Kosbab, Weiland, & Landry, 2005).

The outcome of the experiment was as follows: pessimists were more likely to experience negative or "unpleasant" feelings when drug functionality was claimed (deceptive-expectation); however, both optimists and pessimists underwent similar symptoms when the state of the drug was not identified (conditional-expectation) and when it was claimed inert (Geers et al., 2005, p.124). It can be reasoned that an individual's inclination towards optimism or pessimism can play a role in determining their response to deceptive placebo, and by extension, it can be said that optimists are less likely to experience negative effects considering they are less prone to adopting negative expectations (Geers et al., 2005, p.125).

2.3.4 Expectancies

Kirsch reports that "the degree of responsiveness varies as a function of expectancy" (1985, p.1196). Research conducted by Kirsch showed that expectation has a stronger role in driving placebo response than the actual classically conditioned "pharmacological effect" even if expectations oppose the real effect; for instance, if it is expected that alcohol increases levels of sexual arousal, one is more likely to experience this effect when given placebo alcohol

DOI: 10.54756/IJSAR.2025.3.1

regardless of the real pharmacological effect – decrease in sexual arousal (1985, 1191-1192). This implies that although "classical conditioning" could predict placebo responses, expectations outweigh the influence of conditioning and thus mediate response in trials (Kirsch, 1985).

2.3.5 Emotional and Cognitive Factors

The components of a strong placebo response, reports Price and colleagues (2008), are desire for analgesia, expectation of analgesia, and knowledge of placebo reception (Anderson, T. Stebbins, 2020, p.35). This plays a crucial role in this intended research as participants will be given placebos (however told otherwise) upon request thus maintaining the elements of desire and expectation. Additionally, it has been proven that the simultaneous occurrence of two stimuli - one that is neutral and one that generates a "physiological response" – can lead to producing similar responses to either stimuli if frequently paired up over time (Anderson, T. Stebbins, 2020, p.35-36). When discussing the placebo effect, this phenomenon is observed when "tactile and gustatory properties" of previous medications trigger a response in patients taking placebos of similar feel or flavor (Colloca & Miller, 2011). In the context of this research, these findings – "the classical conditioning model of behavior learning"- allow for appropriate participant scouting in placebo-based research and trials.

While the intrinsic determinants of the placebo response play a vital role in determining how subjects respond to placebo treatment, it is equally important to understand how these factors can be quantified and assessed in experimental and clinical settings. Section 2.4 explores the methods used to measure these factors, including the 'n of 1' trial, patient expectancy, stimulus substitution, and the doctor-patient relationship.

2.4 Measuring the Placebo Effect

As described by most studies, the placebo effect is an inactive substance that is given to the patient as part of the treatment process (Benson & Epstein, 2015, p. 1225). This idea was conveyed in Magro's article, the placebo comes from the Latin words "I shall please," which shows that it is a type of treatment that does not necessarily target a disease, but it is still used to satisfy the patient's physiological needs. Research proves that the placebo plays on the physiological factors rather than biological factors, by helping patients believe in the progression of their treatment instead of directly changing their physical condition (Margo, 1999, p. 32).

2.4.1 Identifying the Placebo Effect

One major struggle is differentiating between the natural healing process of the body and the patient's body improvement due to the placebo effect. To help identify whether the patient's improvement process is due to the treatment given or the placebo effect, researchers came up with a study called the "n of 1 trial." Under this study, one patient randomly receives either a placebo or an active drug at different times. This strategy helps doctors identify whether the patient's strength comes from the treatment progression or the effect of the placebo itself (Margo, 1999, p. 33). Scientific research has shown that the placebo effect varies based on the illness and its natural progression because sometimes patients mix up the natural progression of the disease with the placebo effect. In 1955, Henry Beecher published an article that talks about the placebo effectiveness on specific diseases that ranged from 15% to 58% based on the patient's condition and the type of the disease.

2.4.1.1 Variety and Values

Later, studies then confirmed that the placebo rate varies based on individual patients and the type of the disease (Margo, 1999, p. 33). Other studies have shown that patients with chronic diseases such as irritable Bowel syndrome (IBS) or back pain, quickly respond to the placebo effect with high rates (Klinger et al., 2018). Benson and Epstein claimed that there could be ethical effects to the placebo, by using open-label placebo studies, where doctors inform their patients directly about the procedure of the placebo. Instead of lying to them, the patients can still feel pain relief even after knowing.

2.4.2 Role of Expectation in Pain Relief

Another significant mechanism in the patient's response is patient expectancy, which plays an important role in the pain relief process. Expectancy is the patient's belief in the positive outcome of the procedure. Mostly, those beliefs are based on old patient experiences, which would easily affect their thinking. Expectancy would make the brain release natural painkillers (opioids), which reduces pain for the patients who expect relief compared to the patients who do not respond to the placebo, which would cause deactivation of the dopaminergic system (Klinger et al., 2018).

DOI: 10.54756/IJSAR.2025.3.1

2.4.2.1 Learned Responses

This theory was also agreed on by Curtis Magro's article. Researchers also believe that the placebo effect is deeply influenced by previously learned responses of the patients. Researchers labelled this as "stimulus substitution," where the inactive effect of the placebo, in addition to the healing process of an old treatment, makes the patient believe that any type of treatment would improve their condition and help them recover.

2.4.3 Doctor-Patient Relationship

A different factor in measuring the placebo response is the doctor-patient relationship. The process of healing from illness is based on the doctor and patient's perspective. While the patient views the healing process as the starting point of caring interactions between the doctor and the patient, this would reduce the patient's anxiety and enhance the response rate of the placebo (Margo, 1999, pp. 32-33). Researchers of different studies further support the theory; according to Benson and Epstein, the doctor's attitude, confidence, and belief in the recovery process are what influence the patient's response rate. Researchers believe that the placebo effect is mostly effective in conditions that rely on the individual's physiological response, like psychiatric conditions.

2.5 Conclusion

In conclusion, the placebo effect changed effectively over time. The placebo started from the historical and religious origins and then developed into the complicated physiological and psychological factor it is nowadays. Based on research, the significance of the placebo is mainly affected by the various internal and external factors—like patient expectation, doctor-patient relationship, and the trust level between the participants and the provider—rather than the placebo treatment process. The power of the placebo effect was built according to psychological factors such as patients' past experiences, personalities, and optimism that help shape the placebo-healing responses of the patients.

Although medical professionals had a significant impact on advancing the placebo effect, this research explores whether the element of medical expertise is dispensable when aiming to achieve desired outcomes in placebo treatments.

3. METHODOLOGY

Building on the exploration of trust as a key factor in the placebo effect, this study examines how varying levels of trust in non-medical experimenters influence subjects' responses to treatment. While past research has primarily focused on placebos administered by medical professionals, the psychological mechanisms underlying the placebo effect, particularly in the context of non-professionals conducting experiments, remain largely unexplored. This study seeks to address this gap by investigating whether individuals with higher trust in experimenters exhibit stronger placebo responses compared to those with lower trust, whether participants who receive a placebo from highly trusted non-medical professionals are inclined to alter their perceived or reported responses due to their social connection with the provider, and how varying degrees of trust influence the duration and effectiveness of the placebo.

3.1 Description of Data

The collected data was primarily experimental, as it was based on participants' responses to the administered medication (either eye drops or pills). However, it was analyzed using both quantitative and qualitative approaches: statistical analysis of outcomes and feedback provided by the participants. Once the estimated response time had passed, participants were asked to complete a survey regarding the perceived effects of the medication and the level of relief experienced. The survey consisted of six questions designed to evaluate the effectiveness of both real and placebo treatments while accounting for various factors. The first question recorded the identity of the participant, and the second asked what type of medication they received, whether a circular pill (placebo), a long pill (Panadol, the active drug), pink-packaged eye drops (placebo), or white-packaged eye drops (real). The third question addressed the severity of pain or discomfort prior to taking the medication. The final three questions focused on the drug's response time, the perceived effects, and the participant's overall reaction, captured through both a numerical rating and a written, open-ended response. These qualitative comments allowed participants to provide additional insights, offering context that further supported the interpretation of the results.

DOI: 10.54756/IJSAR.2025.3.1

3.2 Methodology

The procedure began by surveying a selected group of participants to assess their level of trust toward the researchers through a series of scenario-based questions. Respondents were asked to rate their trust on a scale of 1 to 5, where 1 indicated no trust at all and 5 indicated complete trust. Based on the average of their responses, participants were divided into two groups: those with an average score of 2.5 or below were placed in the *Low Trust Group*, while those with an average above 2.5 were assigned to the *High Trust Group*.

Consent forms were then distributed, requesting permission to carry out harmless experiments over a set period without disclosing when the treatments would be administered. Participants were instructed to approach the researchers whenever they required painkillers or eye drops. Upon request, they were randomly given either an active or placebo medication, ensuring each participant received both types an equal number of times to maintain consistency. Every dose administered, along with the recipient, was carefully documented. Participant responses to the treatments were tracked through the survey described in Section 3.1.

Once data collection was complete, researchers analyzed how individuals with different levels of trust responded to placebo versus active medication. The same evaluation was applied to both the high-trust and low-trust groups, and the results were compared to better understand the influence of trust on the placebo effect.

3.3 Rationale of the Study

The participants were chosen based on their trust level in the researchers to test the effectiveness of trust perceptions and how it impacts the placebo effect responses. Trust was displayed as a factor that influenced patients' expectancy processes, as mentioned in section 2.4.2. Studies state that friendship plays a great role in the trust factor, "There is a significant correlation between trust and friendship" (Warris & Rafique, 2009). After the participants were categorized into high-trust and low-trust groups, this research investigated whether those with high trust showed enhanced placebo responses.

In this study, trust was measured through a scenario-based survey, classifying the two different study groups based on the responses received from the subjects. After conducting the experiments, the placebo responses were analyzed through self-reported surveys that involved both multiple-choice and long-response questions. Surveys on forms were used as the research tool for efficiency, flexibility, and reliability since they included both quantitative (rating) and qualitative (multiple-choice) questions. Surveys allowed quick and easy collection of data which made the process more time efficient for the researchers. Multiple studies supported taking surveys as the tool of research:"… Surveys seem best suited for large-scale data gathering…" (Forza, 2016).

To ensure accurate results, the researchers used Excel spreadsheets to keep track of the data and conducted t-tests to verify that the differences were statistically significant, improving the quality of the analysis.

The procedure operated through a non-disclosed cure method where the subjects did not know whether they obtained an inert or active drug by the researchers to maintain accurate results. This strategy was integrated with the expectancy theory that demonstrated how patients' expectations and beliefs determined their physiological and psychological reactions.

3.4 Procedure of the Analysis

As outlined in previous sections, this study aimed to examine the role of trust between subjects and non-professional experimenters in influencing the placebo effect. Participants were categorized into two groups, high-trust and low-trust, based on their responses to a pre-experiment trust survey. Each participant received both a placebo and an active medication on separate occasions, allowing for a within-subject comparison of pain relief responses.

3.4.1 Quantitative Analysis

To assess the impact of trust on the placebo effect, the average reported pain relief (measured on a 1 to 5 scale) was calculated separately for the placebo and active medication trials within each trust group. To determine whether the observed differences in pain relief were statistically significant or merely due to random variation, a paired t-test was conducted using Excel. The p-value was calculated, where a result of $p < 0.05$ indicated a statistically significant difference in pain relief between the placebo and real medication. Additionally, an independent t-test was performed

DOI: 10.54756/IJSAR.2025.3.1

to compare the placebo effect between the high-trust and low-trust groups, allowing for an evaluation of whether trust levels influenced the effectiveness of the placebo.

3.4.2 Qualitative Analysis

To supplement the numerical findings, participants provided open-ended responses describing their experiences after taking the medication. A thematic analysis was conducted to identify recurring patterns in subjective reports, particularly focusing on whether individuals in the high-trust group tended to alter their perceived pain relief due to their social connection with the experimenter.

Furthermore, participants were asked to report their response time to the drug, allowing for an additional dimension of comparison across trust groups. This dual-method approach, combining statistical testing for quantitative data and thematic analysis for qualitative responses, provided a comprehensive understanding of how trust influences the placebo effect in a non-medical experimental setting.

3.5 Conclusion

This chapter provided an overview of the description of the data, methodology, rationale of the study, and the procedure of the analysis. Based on the results collected through

surveys conducted by the researchers on trust levels, the study assessed whether higher levels of trust led to a stronger placebo response. The research also tested the progression of the subjects' pain relief process and whether the extent of trust influenced those subjects toward the individuals who provided the medication.

Through the given objectives, the data was analyzed in both a quantitative and qualitative way. The quantitative analysis included statistical tests to compare the differences in pain relief rates between the placebo and the main drug. On the other hand, the qualitative analysis involved focusing on a constantly repeating pattern in the participants' experiences. The combination of both qualitative and quantitative analysis conveyed a stronger connection between the relationship of the placebo and the trust element.

The presented findings contributed to the existing body of research by highlighting the significant impact of trust on placebo treatment outcomes, even when the treatment was not provided by medical experts. By synthesizing the concept of trust with expectancy theory, the study focused on how people's beliefs influence both their mental and physical responses to the treatment.

4. RESULTS ANALYSIS AND DISCUSSION

4.1 Introduction

Building on the previous chapters, this section discusses the outcomes of the experiment introduced in the methodology chapter. The researchers designed a placebo-based study to explore how psychological factors, primarily trust, influence a person's response to a treatment, whether it is real or fake. The central question was whether participants could be made to feel better simply by believing in the treatment, even when it was a placebo such as a water pill or saline solution. The study focused on two forms of treatment: pills and eye drops.

Participants were divided into high-trust and low-trust groups and were randomly given either a real or placebo treatment when they reported symptoms such as headaches, stomachaches, or fatigue. For pills, the round ones represented placebos, while the long ones were actual drugs. For eye treatment, participants were given either real eye drops (in white packaging) or a placebo in the form of a saline solution (in pink packaging) when they needed to hydrate their eyes. All data was gathered through surveys completed one hour after treatment, which recorded each participant's name, the type of medication received and packaging details, their personal feelings after taking the medication, and their perception of the treatment's effectiveness. This structure allowed researchers to analyze the role of trust in shaping participants' perceived relief and the overall response to both pill-based and eye drop treatments.

4.2 Data Representation and Discussion

Recalling the discussion in the prior section, the participants were divided into two groups: a low-trust group and a high-trust group. Trust levels were measured through a self-evaluation form filled out by the participants. In

DOI: 10.54756/IJSAR.2025.3.1

section 4.2, the demographics of the participants are displayed, the method of categorizing trust levels is explored, and the patterns of responders from different groups are observed**.**

4.2.1 Demographic Characteristics of Participants

In section 4.2.1, demographic information is presented to illustrate how participants were classified into two different groups. It involves details about the age and gender of the participants, in addition to the process used to divide the participants according to their trust levels.

4.2.1.1 Age and Gender Distribution

Although the consent form was sent to 29 participants, only 20 individuals agreed to be part of the experiment, while the 9 remaining individuals rejected it. From those who participated, 10 were placed in the high-trust group and 10 in the low-trust group. The participants' ages ranged from 16 to 18 years old, with the majority being 17 years old. All individuals who participated in the study were female, so no gender-based comparisons were made between the groups.

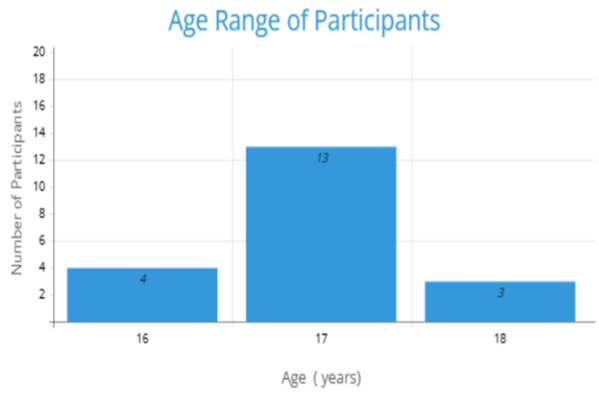

Figure 4.1 (Age range of Participants)

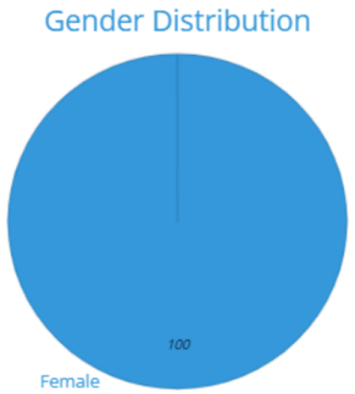

Figure 4.2 (Gender Distribution)

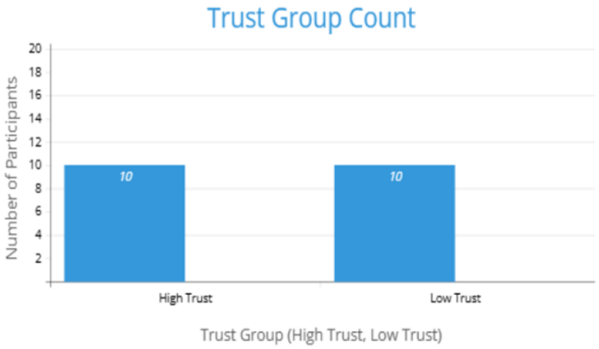

Figure 4.3 (Trust Group Count)

As displayed in figures 4,1 to 4.3, each figure provides a visual representation of key aspects in the participants' characteristics. Figure 4.1 presents the age distribution between participants, showing that most participants are 17 years old, with smaller groups of participants of 16 and 18 years old. Figure 4.2 demonstrates that all participants are identified as female, which explains the absence of gender-based comparison in the study Figure 4.3 shows the division of participants based on trust levels, with an equal number of individuals placed in the high-trust group and low-trust group.

DOI: 10.54756/IJSAR.2025.3.1

4.2.1.2 Trust Classification Method

In the study, trust levels were measured based on five self-evaluating, scenario-based questions designed to assess the amount of trust each participant had in the researchers. The participants were asked to rate their degree of trust in the researchers on a scale of 1 to 5, where 1 represented no trust at all and 5 indicated full trust. After gathering responses from all the participants, the average trust level of each individual was calculated. Participants with an average of 2.5 or below were classified under the low-trust group, while participants with an average above 2.5 were classified in the high-trust group. This classification was only used during the experiment for analysis purposes. It had no effect on the distribution of real or placebo pills and eye drops, as each participant in both trust groups received real medication or eyedrops once and received a placebo once.

Figure 4.4

Trust Group	Average Trust Score Range	Number of Participants	Criteria
Low Trust	1.0 – 2.5	10	Average ≤ 2.5
High Trust	2.6 – 5.0	10	Average > 2.5

Figure 4.4 demonstrates the breakdown of participants depending on their average trust level ratings. As mentioned earlier in the study, participants' trust in the researchers were evaluated through a five-question form. Participants were then divided according to their average scores, into either low-trust group (with average scores between 1.0 to 2.5) or high-trust group (with average scores between 2.6 to 5.0). As represented in the figure, each trust group consisted of 10 participants.

4.2.2 Treatment and Distribution Outcomes

This section discusses the outcomes of the treatments administered to participants and the method of their distribution. As outlined in the methodology chapter, the placebo experiment was conducted on 20 participants. These individuals were divided evenly into two groups based on trust levels to the researchers: 10 participants were assigned to the high-trust group, and the remaining 10 to the low-trust group. Each participant, regardless of group, received both placebo and real treatments. These included inert (placebo) pills and actual medication pills, as well as real eye drops and placebo eye drops in the form of a saline solution. The distribution of treatments was randomized and recorded to ensure consistency in tracking responses across both trust groups.

4.2.2.1 Treatment Administration

The administration of both real and placebo treatments across the two groups was randomized. However, to ensure balanced exposure, each participant was required to receive both real and fake medications, this applied to both pills and eye drops, at least once during the course of the experiment. This requirement contributed to the extended time needed for data collection.

Participants followed a fixed dosage schedule in which medication was administered upon request, based on symptoms such as headaches, stomachaches, fatigue, or dry eyes. To avoid confusion regarding whether a participant had received a real or placebo treatment, a survey was conducted one hour after each dose. The survey recorded the type of medication given: round pills represented the placebo, while long pills represented the active drug (panadol); real eye drops came in white packaging, and the placebo eye drops (saline solution) came in pink packaging. Participants were instructed to indicate in the survey whether they had received a round or long pill, and pink or white-packaged eye drops.

Importantly, participants were unaware of the existence of placebos. They were only informed that the experiment aimed to compare different types of painkillers and eye drops and to evaluate the speed of their response to treatment. Although the decision to administer real or placebo treatments was random, the researchers ensured that each participant received both by the end of the experiment.

DOI: 10.54756/IJSAR.2025.3.1

4.2.2.2 Placebo Responses

The placebo responses are divided into two groups: those of the high trust group and those of the low trust group.

4.2.2.2.1 High Trust Group Placebo Responses

In the high trust group, the results generally aligned with the researchers' expectations. Among the 10 participants who received the placebo painkiller, 6 reported a significant decrease in symptoms and noted feeling better. Some of these participants also mentioned experiencing slight drowsiness, while others described the sensation as "comfortable." The remaining 4 participants reported no noticeable changes in their symptoms, stating that they felt no difference and their trust score was around 2.5-3 out of 5.

Similarly, responses to the placebo eye drops (a saline solution) were predominantly positive. Eight out of ten participants reported feeling better and more hydrated, describing the sensation as one of "relief" and "comfort." The other two participants reported no change in their condition.

4.2.2.2.2 Low Trust Group Placebo responses

In the low trust group, the results were more varied. Out of the 10 participants who took the placebo painkiller, 3 reported feeling better, 5 reported no change, and notably, 2 participants reported feeling worse. Those who experienced improvement had a trust score ranging from 2 to 2.5 out of 5, while those who felt worse had a trust score below 1-1.5. The participants who reported worsened symptoms described increased dizziness and heightened pain following the administration of the placebo.

For the placebo eye drops (saline solution), 5 out of 10 participants reported feeling better, while the remaining 5 reported no noticeable difference. Although participants did not express strong emotional reactions, some described the drops as feeling “comfortable.” The perceived effectiveness of the fake eye drops was relatively higher compared to the placebo pills, possibly because the saline solution closely resembled the real eye drops, whereas the placebo pills looked noticeably different from the actual medication.

4.2.2.3 Real Medication Responses

The real medication responses are divided among two groups: the high trust group and the low trust one.

4.2.2.3.1 High Trust Group Real medication responses

As expected, all 10 participants in the high trust group reported noticeable improvement after taking the real medication. All subjects stated they felt significantly better . The relief was described as “immediate” or “within a short period,” depending on the individual. Commonly reported improvements included reduced pain, increased energy, and an overall sense of well-being.

In addition, all 10 participants also responded positively to the real eye drops, describing sensations of refreshment, clarity, and relief. Participants consistently stated they felt “perfectly fine,” and no negative reactions were recorded.

4.2.2.3.2 Low Trust Group Real medication responses

Due to the skepticism commonly observed in the low trust group, the responses to the real medication were slightly less consistent compared to the high trust group. After taking the real painkiller, 9 out of 10 participants reported feeling better, while 1 participant experienced no noticeable change. However, even among those who reported improvement, the effects were generally delayed and described as "uncomfortable yet effective." This suggests that a lower level of trust may have influenced their initial perception of the medication's effectiveness.

Similarly, responses to the real eye drops followed a comparable pattern. While 8 out of 10 participants reported feeling better, 2 participants noted no significant change. Those who experienced improvement described the sensation as similar to their previous experiences, mild relief and comfort, but less intense than those in the high trust group.

DOI: 10.54756/IJSAR.2025.3.1

4.2.2.4 Analysis and Comparison of outcomes

The real medication vs the placebo results showed great variety among the two trust groups, it must be highlighted that the element of trust had a significant role in manipulating the results of the high trust group, to be proven and as mentioned in the previous chapter a qualitative and quantitative analysis and comparison will be done.

4.2.2.4.1 Quantitative analysis and comparison

As mentioned in the Methodology chapter, both a paired t-test and an independent t-test were conducted to accurately evaluate participant responses and effectively compare the effects of trust on pain relief. As shown in Figure 4.5, the average pain relief from the placebo was higher in the high-trust group (3.6) compared to the low-trust group (2.7). However, according to the independent t-test results displayed in Figure 4.6, the difference in placebo scores between the two trust groups was not statistically significant ($p = 0.246$), as supported by overlapping error bars. This suggests that while a trend is visible, where trust level appears to influence placebo response, further research with a larger sample size is needed to confidently confirm this effect.

In contrast, the paired t-test results shown in Figure 4.7 clearly demonstrated the effectiveness of the experiment in revealing differences within groups. The low-trust group exhibited a statistically significant difference in pain relief between the real medication and the placebo ($p = 0.006$), indicating a more pronounced placebo effect. Participants in this group were more able to distinguish between the treatments. On the other hand, the high-trust group did not show a significant difference between the two treatments ($p = 0.137$), suggesting their level of trust may have influenced a more uniform pain relief response. These findings support the idea that trust plays a critical role in shaping individuals' responses to placebo treatments.

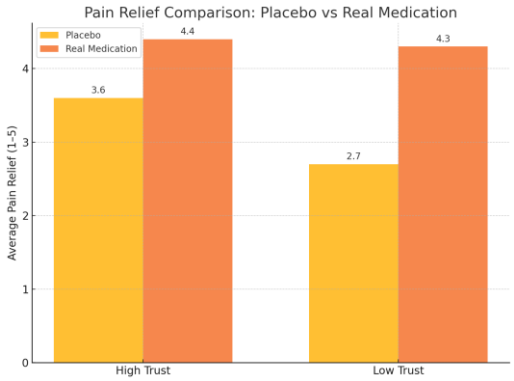

Figure 4.5 (Pain Relief Comparison)

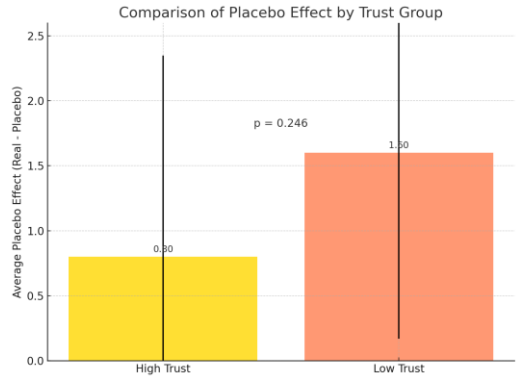

Figure 4.6 (Independent t-test)

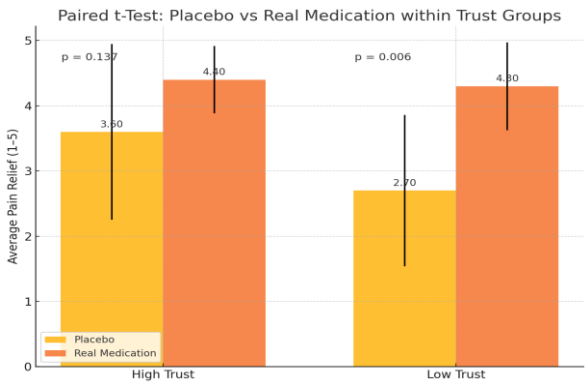

Figure 4.7(Paired- t-test)

DOI: 10.54756/IJSAR.2025.3.1

4.2.2.4.2 Qualitative Analysis and Comparison

The qualitative responses revealed clear differences in how trust influenced participants' perceptions. A thematic analysis was conducted to identify recurring patterns in subjective reports, especially to explore whether individuals in the high-trust group altered their perceived pain relief due to their social connection with the experimenter. Many high-trust participants described improvements in vague or emotionally positive terms such as "comfortable" or "relieved," even when given placebos, suggesting that trust may have amplified their expectations. Six out of ten placebo pill recipients in this group reported feeling better, and eight out of ten responded positively to the placebo eye drops. Real medication responses were unanimously positive, with participants noting fast and clear relief.

In contrast, the low-trust group showed more mixed and cautious responses. Only three participants reported benefits from the placebo pill, while two described worsened symptoms such as dizziness. Placebo eye drop responses were evenly split between mild comfort and no change. For the real medication, most low-trust participants did report feeling better, but often described delayed effects or discomfort, using terms like "uncomfortable yet effective." These findings indicate that trust not only shaped how participants rated their experience, but also influenced how they emotionally processed and described their treatment outcomes.

4.3 Psychological Analysis

As previously mentioned, this research aims to assess the role of trust in manipulating the effects and relief experienced from certain placebo drugs. Whether it is by responding faster to the drug or by presenting favorable outcomes, the power of the mind and its connections with trusted individuals has the ability to affect one's physical state.

4.3.1 The Role of Trust in the Placebo Effect

Upon analyzing the statistics, it was evident that individuals in the high-trust group exhibited significantly divergent outcomes from those in the low-trust group. This can be attributed to the close social relationship between the high-trust group and the researchers, compared to the relationship of members of the low-trust group with the researchers; the close social ties emphasize the trust felt toward the researchers and thus with the drug provided to them.

For starters, most individuals in the high-trust group did not show signs of skepticism when given an unfamiliar form of painkillers. Most individuals can recognize the long, pill-shaped form of Panadol; yet, when presented with a flat, circular pill claiming to offer similar relief, members of the high-trust group accepted the claim without questioning its efficacy or authenticity. This behavior correlates with the level of trust assessed in the initial questionnaire. On the contrary, the low-trust group showed discomfort towards the foreign drug and required reassurance regarding its effects. This difference, however, was not applicable when testing eye drops and placebo eyedrops since the packaging varied slightly.

Alongside the easy acceptance of the drug, the high-trust group detected results in a shorter period when given either the active or inert drug in comparison to the reported time of response of the low-trust group. This circles back to the original idea of this research, the mind-body connection; the act of taking a drug and expecting positive results can enhance the effects of an active drug and can improve symptoms even when taking a placebo. Nonetheless, these results are not sufficient to eliminate the use of active pharmaceuticals, considering that around 40% of the high-trust group did not sustain noticeable outcomes when taking the placebo.

4.3.2 Cognitive and Emotional Responses to Treatment

Expectations prior to taking a placebo are one of the most fundamental drivers of the placebo effect, as mentioned in section 2.3.4. Individuals in the high-trust group displayed clear optimism regarding the drug's effectiveness and promised relief, setting the stage for favorable outcomes and increasing the likelihood of experiencing comfort. The low-trust group, however, did not express such direct optimism but rather doubt. This is

DOI: 10.54756/IJSAR.2025.3.1

arguably expected due to the nature of the experiment in a school setting and the already minimal level of trust shared with the providers.

The expectations of participants in both groups were echoed in the second questionnaire, administered after the treatment, which asked about the degree of perceived relief. The connection between expectation, trust, and outcome is further supported by the questionnaire results: in the high-trust group, 60% of participants who took placebo painkillers and 80% of those who used placebo eye drops reported relief that aligned with their optimistic, trust-based expectations. In contrast, only a minority of individuals in the low-trust group reported positive outcomes, 50% of placebo eye drop users noted some improvement, while just 30% of placebo painkiller users reported reduced pain.

The power of expectation not only influences the extent of relief but can also undermine the effects of an active drug. Namely, 20% of eye drop users and 10% of active painkiller users reported no change in how they felt after taking the drug. This highlights how doubt and other emotion-based judgments can shape perceived senses.

4.3.3 Perception vs. Reality: Placebo and Nocebo Effects

Similar to how trust can cause positive effects to arise, distrust can do the opposite. In the low-trust group, responses to the placebo painkillers varied, with about 50% feeling no effects from the placebo. Surprisingly, two out of the ten participants in the low-trust group experienced adverse symptoms upon taking the placebo painkiller, a phenomenon known as nocebo, and three participants felt positive effects. When taking the active drug, 80% of participants felt improvement, whilst 20% experienced no change in symptoms.

These statistics propose the idea that a heavily monitored experimental environment may cause individuals to hyper-fixate on their states, which may lead to reporting negative responses to an otherwise inert drug, or no response to an active, familiar drug.. It can be said that the increased doubt fostered in the low-trust group upon the distribution of consent forms and frequent questionnaires played a role in increasing suspicion of the drug and the intention of the experiment. These results allow for the conclusion that the degree of trust that each participant holds toward the providers can alter their perception of the expected results and thus reflect these expectations onto themselves.

4.3.4 Summary of Psychological Insights In summary, the results of the experiment provide a demonstration of how psychological aspects such as trust, expectation, emotion, etc., can alter the physical perception of symptoms. When a combination of assurance and favorable expectations occupies an individual, it may prompt the reflection of these expectations onto the individual's physical state, making them feel effects with no actual chemical drive. Likewise, distrust, doubt, and apprehension can hinder the therapeutic effect of pharmaceuticals or even stimulate discomfort from inactive drugs and placebos. In some cases, relief-inducing active medications may cause a feeling of malaise, aligning with skepticism and unease in a research context. These connections between psychological and physical perceptions suggest that a significant portion of relief from medications can be attributed to trust, whether in medical professionals or peers with close social ties.

4.4 Conclusion

The results demonstrated that trust significantly influences individuals' experiences of pain relief following both real and placebo treatments. Participants in the high-trust group consistently reported more positive responses, even when given fake pills or eye drops, suggesting that their trust enhanced expectations and shaped physical perceptions. In contrast, the low-trust group showed mixed responses, with some experiencing no change and others reporting negative effects, known as nocebo responses. These findings highlight the powerful role of psychological factors such as trust, emotion, and expectation in treatment outcomes. While placebos cannot replace real medication, the results emphasize the importance of strong patient-provider relationships and effective communication in healthcare, showing that trust can meaningfully impact both perception and physical well-being.

5. CONCLUSION

5.1 Summary of the Findings

As stated multiple times throughout the study, this research aims to identify the psychological factors, primarily trust, that influence the effectiveness and duration of the placebo effect, particularly when the treatment is administered by non-medical professionals such as peers or acquaintances. Additionally, the study explores whether participants who

DOI: 10.54756/IJSAR.2025.3.1

receive a placebo from highly trusted non-medical professionals may feel inclined to conceal or distort their true responses, both to themselves and to others, due to the social relationship between the provider and the participant. Specifically, the study compares the responses of participants with varying levels of trust in the researchers, categorized into high-trust and low-trust groups, to both inert (placebo) and active medications. The findings highlight the significant role of trust in enhancing the placebo effect. The key result of this study is the notable effectiveness of both real and placebo treatments among participants in the high-trust group. In this group, 60% of participants experienced enhanced responses at a faster rate when given the placebo, compared to only 30% in the low-trust group, who reported improvements over a longer period.

5.2 Implications of the Study

This research addresses a previously unexplored area by focusing on psychological factors, particularly trust, as key influences on the placebo effect, an angle that has been largely overlooked in prior studies. Given the limited research examining the role of trust in modulating the placebo response, this study was designed to investigate how close interpersonal relationships can impact brain responses to pain through social dynamics. The findings strongly aligned with initial expectations, which were grounded in previous research showing that the placebo effect often occurs due to a patient's trust in their doctor. This study reinforces the idea that the doctor-patient relationship plays a vital role in activating the placebo effect. Moreover, it extends this understanding by demonstrating that the placebo effect can also occur when the treatment is administered by trusted non-medical individuals, such as peers, acquaintances, or family members.

5.3 Delimitations of the Study

Although the researchers found the collected data and concluded results to be in alignment with previously conducted studies regarding placebo, it must be mentioned that the veracity of the experiment fell short in a few domains.

In terms of participants, it was a rather limited pool when it came to variety in sex and age. This was primarily due to the nature of the experimental setting, which restricted the availability of trusted individuals. The experiment took place in a segregated school where peers who exhibited any form of trust were in one classroom; in this case, the experimental groups were made up of females aged 16–18. Further studies and experimental trials could include an expanded breadth of participant demographics.

Furthermore, the shape of the active and inert painkillers was not identical; the elongated shape of active Panadol was well-known amongst the experimental groups, whereas the circular placebo pills, which were referred to as "the second brand," were unfamiliar, increasing the probability of doubt and skepticism. Identical pills would have eliminated this drawback and made the results more accurate.

Considering that the method used to collect participants was through encouraging involvement rather than self-driven administration, a constant reminder to request painkillers and eyedrops was needed to keep the participants within the guidelines of the experiment and to efficiently collect data. These reminders alter the natural need for such drugs and can hinder the outcomes and the perceived results. Having a set of voluntary, educated participants across an extended period of time allows for the actual need for a drug to be present upon every request, not only under the constant reminder to engage with the researchers.

Overall, the demographics of the participants, their selection method, and the way drugs were presented to them could be modified to elevate the accuracy and fidelity of the experimental results.

5.4 Further Research

To ensure a better understanding of the results from the prior research, future studies are encouraged to explore additional variables and consider other factors. As previously mentioned in Section **4.2.1.1**, all participants who joined the study were female participants which eliminated all the gender-based comparisons. Since this study's main focus was only on the female gender and researchers were not able to test it on the male gender, future studies might include the male gender to maintain gender equality, comparisons, and stabilization. Another factor that could provide future researchers with more accurate results is expanding the test group to a wider scale of participants outside Sharjah, including family members, relatives, or even university students. In the present study, researchers were restricted to a smaller group of participants that they were surrounded by in order to be able to experiment on them, which limited the diversity and results of the sample. In order for future researchers to have a deeper understanding of the results,

DOI: 10.54756/IJSAR.2025.3.1

they are advised to explore some additional factors like stress levels, sleep quality, and individuals' characteristics. These three factors strongly impact the placebo responses by affecting the participant's body and mind, promoting a positive reaction to the treatment. Researchers in the study used survey forms to gather their data, but it is suggested for future studies to address both qualitative and quantitative methods. For example, referring to both surveys and interviews to collect data would provide researchers with a deeper insight into the participants' experiences.

5.5 Conclusion

This section of the study discussed the impact of psychological factors on the placebo effect, concentrating on trust levels between peers after receiving medicine from their friends. The results explained the effectiveness of trust on the responses, as they supported the hypothesis, participants in the high-trust group recovered faster and felt more relieved compared to those in the low-trust group. These results strengthen previously discussed research about trusted relationships, and how it activates a strong placebo response.

Although the study covered valuable interpretations, researchers faced several limitations during their research. The demographics included only female students aged between 16-18 living in one city, which restricted the researchers from generalizing their findings, and reduced the accuracy of the results. Another issue that the researchers faced was the difference in appearance between the real medication and the placebo pill which might have caused the participants to hesitate taking the pills. Researchers' constant reminders to the participants that the experiment was still ongoing might have made the participants dissatisfied and also affected the accuracy, and authenticity of the results. Despite these restrictions, the study successfully proved the effectiveness of the trust factor on placebo response.

ACKNOWLEDGMENTS

We, the research team, would like to extend our heartfelt gratitude to everyone who contributed to the completion of this research.

Our deepest appreciation goes to our supervisor, Mrs. Shatha Melies, whose unwavering support and guidance made this paper possible. We are truly grateful for the time, effort, and dedication she devoted to us throughout this journey. Her generous assistance and insightful feedback brought clarity and depth to each chapter, making the research more vivid and meaningful. Mrs. Melies's expertise in the field of English Language and Literature was evident in the way she mentored us, and her encouragement was instrumental in shaping the quality of our work.

Moreover, we owe a debt of gratitude to our parents, who supported us throughout the process of writing this paper. Their constant presence and willingness to provide both emotional and physical support were deeply appreciated. Lastly, we extend our sincere thanks to our friends, who encouraged us to explore this topic and stood by us during moments of stress, offering motivation and solidarity.

REFERENCES

De Craen, A. J., Kaptchuk, T. J., Tijssen, J. G., & Kleijnen, J. (1999). Placebos and placebo effects in medicine: Historical overview. *Journal of the Royal Society of Medicine*, 92(10), 511–515. https://doi.org/10.1177/014107689909201005

Kerr, C. E., Milne, I., & Kaptchuk, T. J. (2008). William Cullen and a missing mind-body link in the early history of placebos. *Journal of the Royal Society of Medicine*, 101(2), 89–92. https://doi.org/10.1258/jrsm.2007.071005

Shapiro, A. K. (1964). Factors contributing to the placebo effect: Their implications for psychotherapy. *American Journal of Psychotherapy*, 18(Suppl 1), 73–88. https://doi.org/10.1176/appi.psychotherapy.1964.18.s1.73

Damien, J. (2018). Sex differences in analgesia induced by conditioned pain modulation, hypnosis and placebo treatments. *Pain*, 159(8), 1479–1485. https://doi.org/10.1097/j.pain.0000000000001226

DOI: 10.54756/IJSAR.2025.3.1

Finniss, D. G. (2018). Placebo effects: Historical and modern evaluation. *International Review of Neurobiology*, 139, 1–27. https://doi.org/10.1016/bs.irn.2018.07.010

Margo, C. E. (1999). *The placebo effect*. Survey of Ophthalmology, 44(1), 31–44. https://doi.org/10.1016/S0039-6257(99)00060-0

Colagiuri, B., Schenk, L. A., Kessler, M. D., Dorsey, S. G., & Colloca, L. (2015). The placebo effect: From concepts to genes. *Neuroscience & Biobehavioral Reviews, 57*, 56-70. https://doi.org/10.1016/j.neubiorev.2015.08.003

Cataland, S. R., Peyvandi, F., Mannucci, P. M., Lämmle, B., Kremer Hovinga, J. A., Machin, S. J., Scully, M., Rock, G., Gilbert, J. C., Yang, S., Wu, H., Jilma, B., & Knoebl, P. (2012). Initial experience from a double-blind, placebo-controlled, clinical outcome study of ARC1779 in patients with thrombotic thrombocytopenic purpura. *American Journal of Hematology*, 87(4), 430–432. https://doi.org/10.1002/ajh.23106

Lasagna, L., Mosteller, F., von Felsinger, J. M., & Beecher, H. K. (1954). A study of the placebo response. *The American Journal of Medicine, 16*(6), 770–779. https://doi.org/10.1016/0002-9343(54)90441-6

Egbert, L. D., Battit, G. E., Welch, C. E., & Bartlett, M. K. (1964). Reduction of postoperative pain by encouragement and instruction of patients: A study of doctor-patient rapport. *The New England Journal of Medicine, 270*(16), 825–827. https://doi.org/10.1056/NEJM196404162701606

Warris, A., & Rafique, R. (2009). Trust in friendship: A comparative analysis of male and female university students. *Bulletin of Education and Research*, 31(2), 75–84. https://www.researchgate.net/publication/216049657_Trust_in_Friendship_A_Comparative_Analysis_of_Male_and_Female_University_Students

Harvard Health Publishing. (n.d.). The power of the placebo effect. *Harvard Health*. Retrieved [Feb, 2025], from https://www.health.harvard.edu/newsletter_article/the-power-of-the-placebo-effect

Better Health Channel. (n.d.). Placebo effect. *Better Health Channel*. Retrieved [Feb,2025], from https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/placebo-effect

Cleveland Clinic. (n.d.). Placebo effect. *Cleveland Clinic*. Retrieved [Feb, 2025], from https://health.clevelandclinic.org/placebo-effect

Wager, T. D., & Atlas, L. Y. (2013). The neuroscience of placebo effects: Connecting context, learning and health. *Nature Reviews Neuroscience, 14*(7), 470-482. https://doi.org/10.1038/nrn3535

Healthline. (n.d.). Placebo effect: What is it and how does it work? *Healthline*. Retrieved [Feb, 2025], from https://www.healthline.com/health/placebo-effect#what-we-dont-know

Margo, C. E. (1999). The placebo effect. *Survey of Ophthalmology*, 44(1), 31-44. https://doi.org/10.1016/S0039-6257(99)00060-0

Wager, T. D., & Atlas, L. Y. (2013). The neuroscience of placebo effects: Connecting context, learning and health. *Nature Reviews Neuroscience, 14*(7), 470-482. https://doi.org/10.1038/nrn3535

Healthline. (n.d.). Placebo effect: What is it and how does it work? *Healthline*. Retrieved [Feb, 2025], from https://www.healthline.com/health/placebo-effect#the-psychology

DOI: 10.54756/IJSAR.2025.3.1

Houston, J. P. (n.d.). The doctor himself as a therapeutic agent. *Semantic Scholar*. Retrieved [Feb,2025], from https://www.semanticscholar.org/paper/THE-DOCTOR-HIMSELF-AS-A-THERAPEUTIC-AGENT-Houston/a29e9d99846f6db2cd6706d0b2bc8d1277b16c72

Brody, H. (1997). The doctor as therapeutic agent: A placebo effect research agenda. In A. Harrington (Ed.), *The placebo effect: An interdisciplinary exploration* (pp. 77-92). Harvard University Press. https://psycnet.apa.org/record/1997-09152-004

Di Blasi, Z., Harkness, E., Ernst, E., Georgiou, A., & Kleijnen, J. (2001). Influence of context effects on health outcomes: A systematic review. *The Lancet, 357*(9258), 757–762. https://doi.org/10.1016/S0140-6736(00)04169-6

de la Fuente-Fernández, R., Ruth, T. J., Sossi, V., Schulzer, M., Calne, D. B., & Stoessl, A. J. (2001). Expectation and dopamine release: Mechanism of the placebo effect in Parkinson's disease. *Science, 293*(5532), 1164–1166. https://doi.org/10.1126/science.1060937

Ernst, E., & Herxheimer, A. (1996). The power of placebo. *BMJ*, 313(7072), 1569–1570. https://doi.org/10.1136/bmj.313.7072.1569

Geers, A. L., Weiland, P. E., Kosbab, K., Landry, S. J., & Helfer, S. G. (2005). Goal activation, expectations, and the placebo effect. *Journal of Personality and Social Psychology, 89*(2), 143–159. https://doi.org/10.1037/0022-3514.89.2.143

Kirsch, I. (1985). Response expectancy as a determinant of experience and behavior. *American Psychologist*, 40(11), 1189–1202. https://doi.org/10.1037/0003-066X.40.11.1189

Anderson, S., & Stebbins, G. T. (2020). Determinants of placebo effects. In *Placebo Effects in Neurologic Disease* (Vol. 153, pp. 29–47). International Review of Neurobiology. https://doi.org/10.1016/bs.irn.2020.03.029

Colloca, L., & Miller, F. G. (2011). How placebo responses are formed: A learning perspective. *Philosophical Transactions of the Royal Society B: Biological Sciences, 366*(1572), 1859–1869. https://doi.org/10.1098/rstb.2010.0398

Benson, H., & Epstein, M. D. (1975). The placebo effect: A neglected asset in the care of patients. *Journal of the American Medical Association, 232*(12), 1225–1227. https://doi.org/10.1001/jama.232.12.1225

Klinger, R., Kothe, R., Schmitz, J., Kamping, S., & Flor, H. (2018). Clinical use of placebo effects in patients with pain disorders. *International Review of Neurobiology, 139*, 107–128. https://doi.org/10.1016/bs.irn.2018.07.015

DOI: 10.54756/IJSAR.2025.3.1