

Internship Training at

IIHMR DELHI

by

Name - Aman Gulati

PG/23/013

Under the guidance of

**Dr. Anandhi Ramachandran**

PGDM (Hospital & Health Management)

2023-25



**International Institute of Health Management Research  
New Delhi**

Internship Training at

IIHMR Delhi

A report on  
**Evaluating the effectiveness of Whatsapp-based  
interventions for lifestyle behavior modification in  
Hypertension Patients**

Name- Aman Gulati

Enroll No.- PG/23/013

Under the guidance of  
**Dr. Anandhi Ramachandran**

PGDM (Hospital and Health Management) 2023-25



**International Institute of Health Management Research  
New Delhi**

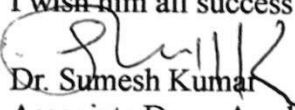
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This is to certify that Aman Gulati, student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at IIHMR, Delhi from April to June.

The Candidate has successfully carried out the study designated to him during internship training and his/her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his/her future endeavors.

  
Dr. Sumesh Kumar  
Associate Dean, Academic and Student Affairs  
IIHMR, New Delhi

  
Dr. Anandhi Ramachandran  
IIHMR, New Delhi

## Certificate of Approval

The following dissertation titled **“EVALUATING THE EFFECTIVENESS OF WHATSAPP-BASED INTERVENTIONS FOR LIFESTYLE BEHAVIOUR MODIFICATION IN HYPERTENSION PATIENTS”** at **IIHMR Delhi** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

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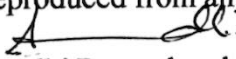
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Praveen Kumar

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Praveen Kumar

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This is to certify that **Mr. Aman Gulati**, a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. He/ She is submitting this dissertation titled “**Evaluating the effectiveness of Whatsapp-based interventions for lifestyle behavior modification in Hypertension Patients**” at “**IIHMR Delhi**” in partial fulfillment of the requirements for the award of the **PGDM (Hospital & Health Management)**.

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

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This is to certify that the dissertation titled **EVALUATING THE EFFECTIVENESS OF WHATSAPP-BASED INTERVENTIONS FOR LIFESTYLE BEHAVIOUR MODIFICATION IN HYPERTENSION PATIENTS** and submitted by Aman Gulati. Enrollment No.- PG/23/013 for award of PGDM (Hospital & Health Management) of the Institute carried out during the period from April to June embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.



Signature  
Aman Gulati

## FEEDBACK FORM

Name of the Student: Aman Golati

Name of the Organisation in Which Dissertation Has Been Completed: IIMR, Delhi

Area of Dissertation: Digital Health Interventions in Chronic Disease Management.

Attendance:

Objectives achieved: - To review & synthesize existing studies on whatsapp-based interventions for lifestyle modification in hypertension patients.  
- To assess effectiveness of these interventions.  
- To identify gaps & limitations in current research.

Deliverables:

- Dissertation report, Table of included studies, PRISMA flow diagram, Recommendation for Practice.

Strengths: Open to learn, obedient

Suggestions for Improvement: Need to be more proactive & take initiatives. Keep up the timing.

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):



Signature of the Organisation Mentor

Date: 21/7/25

Place: IIMR, Delhi



# INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH (IIHMR)

Plot No. 3, Sector 18A, Phase- II, Dwarka, New Delhi- 110075

Ph. +91-11-30418900, [www.iihmrdelhi.edu.in](http://www.iihmrdelhi.edu.in)

## CERTIFICATE ON PLAGIARISM CHECK



|                                                  |                                                                                                                                                             |                   |               |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|
| Name of Student (in block letter)                | Dr./Mr./Ms.: AMAN GULATI                                                                                                                                    |                   |               |
| Enrollment/Roll No.                              | PG/23/013                                                                                                                                                   | Batch Year        | 2023-25       |
| Course Specialization (Choose one)               | Hospital Management                                                                                                                                         | Health Management | Healthcare IT |
| Name of Guide/Supervisor                         | Dr./Prof.: ANANDHI RAMACHANDRAN                                                                                                                             |                   |               |
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Guide/Supervisor

Name: Dr. Anandhi Ramachandran

Signature: K. A. dl.

Student

Name: Aman Gulati

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**EVALUATING THE EFFECTIVENESS OF WHATSAPP-  
BASED INTERVENTIONS FOR LIFESTYLE BEHAVIOUR  
MODIFICATION IN HYPERTENSION PATIENTS: A  
NARRATIVE REVIEW**

**A Dissertation Submitted in Partial Fulfilment  
of the Requirements for the Degree of**

**PGDM**

**in  
Hospital & Healthcare Management  
By**

**Aman Gulati  
PG/23/013**

**Under the Guidance of  
Dr. Anandhi Ramachandran  
Professor  
IIHMR, DELHI**

**June 2025**

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# Evaluating the Effectiveness of WhatsApp-Based Interventions for Lifestyle Behaviour Modification in Hypertension Patients: A Narrative Review

## 1. Abstract

**Background:** Hypertension remains one of the most prevalent non-communicable diseases globally, often linked to poor adherence to lifestyle and medication regimens. WhatsApp-based interventions have gained attention as scalable, cost-effective mHealth tools for improving self-management behaviors in chronic diseases.

**Objective:** To evaluate the effectiveness of WhatsApp-based interventions in modifying lifestyle behaviors and managing hypertension, with emphasis on adherence, blood pressure control, dietary and physical activity behaviors, and user engagement.

**Methods:** A narrative review was conducted using PubMed and Google Scholar. Studies from 2018 onward were included based on predefined inclusion criteria. Thematic analysis was performed on 11 selected studies, including randomized controlled trials (RCTs), pilot studies, and qualitative evaluations.

**Results:** WhatsApp interventions demonstrated positive outcomes in improving medication adherence, dietary habits, physical activity, self-care behaviors, and, in some cases, blood pressure control. Key enablers included real-time feedback, peer support, and multimedia content. Challenges involved technical issues, privacy concerns, and lack of integration into clinical care.

**Conclusion:** WhatsApp-based interventions show promise for lifestyle modification and hypertension management, especially in low-resource settings. More hypertension-specific studies and long-term evaluations are needed to confirm efficacy and guide integration into healthcare systems.

## 2. Introduction

Hypertension affects over 1.28 billion people globally and is a leading risk factor for cardiovascular and renal diseases (WHO, 2023). In India, according to the **National Family Health Survey-5 (NFHS-5)**, nearly **24% of men and 21% of women aged 15 and above** are hypertensive. However, control rates remain critically low — less than **15%** of those diagnosed with hypertension maintain their blood pressure within recommended limits (ICMR, 2021). This is primarily due to poor medication adherence, inadequate lifestyle modifications, and limited follow-up in conventional care systems.

In low- and middle-income countries like India, innovative and scalable digital health interventions are urgently needed to bridge gaps in awareness, adherence, and continuous support. WhatsApp, with over **500 million users in India alone**, is a widely accessible, low-cost mobile messaging platform. Its real-time messaging, multimedia features, and group support functionalities offer promising avenues for behavioral interventions in chronic disease management.

Given these gaps and opportunities, it becomes necessary to evaluate the effectiveness of WhatsApp-based interventions in promoting healthy behaviors and improving hypertension outcomes. A better understanding of how these digital strategies perform can help inform policies, scale sustainable models, and improve chronic disease outcomes at the community level.

### 3. Literature Review

- The growing burden of hypertension and its associated complications has necessitated innovative approaches to improve patient self-management and adherence to lifestyle modifications. Mobile health (mHealth) interventions, particularly those leveraging widely accessible platforms like WhatsApp, have emerged as promising tools for chronic disease management. Existing literature highlights several key trends regarding the effectiveness of WhatsApp-based interventions.
- For instance, educational programs delivered via WhatsApp have demonstrated significant improvements in disease-specific knowledge. A 2018 intervention study reported a marked increase in Type 2 Diabetes knowledge among participants after exposure to a WhatsApp-based educational program, underscoring the platform's utility in health education dissemination. Beyond knowledge enhancement, WhatsApp interventions have also shown positive impacts on behavioural outcomes. A 2020 randomized clinical trial found that hypertensive and diabetic patients who received WhatsApp-based educational support exhibited improved medication adherence compared to a control group. Similar findings were observed in a 2023 RCT involving overweight/obese pregnant women with diabetes, where WhatsApp-based self-care education led to significant improvements in lifestyle adherence and self-care behaviours.
- Clinical outcomes have also been favourably influenced by such interventions. Multiple RCTs, including a 2020 study on diabetes self-management, reported better glycaemic control among participants in WhatsApp intervention groups, with mean HbA1c reductions of  $-0.9\%$ . Text message-based interventions, a closely related modality, have also demonstrated reductions in blood pressure among hypertensive patients, suggesting potential translatability to WhatsApp-based programs.
- User engagement and feasibility studies further support the platform's adoption. A 2022 pilot study on digital lifestyle interventions for diabetes self-management noted high user satisfaction and engagement, attributing these outcomes to the convenience and peer support features of WhatsApp. Qualitative evaluations echoed these findings, with participants valuing real-time feedback and the sense of community fostered by group interactions. However, challenges such as technical issues, privacy concerns, and declining engagement over time were also identified, emphasizing the need for user-centered design and robust technical infrastructure.
- The adaptability of WhatsApp interventions across diverse settings is another notable strength. A 2023 pilot study in Pakistan demonstrated the feasibility of a peer-supported, WhatsApp-assisted lifestyle modification program for weight reduction in diabetic patients, even in low-resource environments. This scalability underscores the potential for broader implementation in similar contexts, particularly where traditional healthcare delivery systems are strained.

## **4. Methodology**

### **4.1 Design**

Narrative literature review.

### **4.2 Databases Searched**

- PubMed
- Google Scholar

### **4.3 Search Strategy**

**Key words combination of Term 1 AND Term 2 AND Term 3:**

- Term 1: WhatsApp, Social Media, Digital Tool, Digital Intervention
- Term 2: Lifestyle, Lifestyle modification, Lifestyle behaviour change
- Term 3: Hypertension, Hypertensive Patients, Diabetes

### **4.4 Inclusion Criteria**

- Studies involving hypertensive patients or mixed populations (e.g., hypertension + diabetes) where hypertension outcomes are reported.
- WhatsApp-based interventions (e.g., education, reminders, peer support) targeting lifestyle behaviours (diet, exercise, medication adherence).
- Studies reporting outcomes related to hypertension management
- Randomized controlled trials (RCTs), quasi-experimental studies, pilot studies, qualitative studies evaluating feasibility/experiences.
- Studies published from 2018 onward
- English-language publications.

### **4.5 Exclusion Criteria**

- Studies focusing solely on non-hypertensive populations (e.g., diabetes-only, obesity-only).
- Interventions using other platforms (e.g., SMS, mobile apps) or non-digital methods.
- Studies without measurable hypertension-related outcomes.
- Editorials, commentaries, conference abstracts without full data, non-peer-reviewed articles.
- Studies published before 2018.
- Non-English publications.

### **4.6 Data Analysis**

Thematic analysis was conducted to extract and categorize study characteristics, outcomes, and recurring themes.

### **4.7 Study Selection Process**

The study selection process is summarized in the PRISMA flow diagram (Figure 1). A total of 111 records were identified through database searches (PubMed and Google Scholar). After removing duplicates and applying inclusion/exclusion criteria, 11 studies were included in the final synthesis.

Figure 1: PRISMA Flow Diagram of Study Selection Process

This diagram illustrates the number of records identified, screened, excluded, and finally included in the review.

X-axis: Stages of Selection (Identification, Screening, Eligibility, Inclusion)

Y-axis: Number of Studies

**Figure 1**

**PRISMA Flow Diagram**

|                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IDENTIFICATION PHASE</b><br>Records identified through database searching: <ul style="list-style-type: none"><li>• PubMed (n=58)</li><li>• Google Scholar (n=53)</li></ul> Total records identified: 111                                                                                             |
| <b>SCREENING PHASE</b><br>Records after duplicates removed: 98<br>Records screened by title/abstract: 98<br>Records excluded (n=72): <ul style="list-style-type: none"><li>• Not WhatsApp-based (n=32)</li><li>• No hypertension focus (n=25)</li><li>• Wrong intervention type (n=15)</li></ul>        |
| <b>ELIGIBILITY PHASE</b><br>Full-text articles assessed for eligibility: 26<br>Full-text articles excluded (n=15): <ul style="list-style-type: none"><li>• No hypertension outcomes (n=7)</li><li>• Non-English (n=3)</li><li>• Pre-2018 publication (n=3)</li><li>• Wrong study design (n=2)</li></ul> |
| <b>INCLUDED STUDIES</b><br>Studies included in qualitative synthesis: 11 <ul style="list-style-type: none"><li>• From PubMed (n=8)</li><li>• From Google Scholar (n=3)</li></ul>                                                                                                                        |

**Figure 2****List of Studies included**

| <b>Year</b> | <b>Journal Details</b> | <b>Study Title</b>                                                                                                                                                    |
|-------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2018        | PubMed                 | Evaluation of a Mobile Social Networking Application for Improving Diabetes Type 2 Knowledge: An Intervention Study Using WhatsApp                                    |
| 2020        | PubMed                 | Educational Intervention Using WhatsApp on Medication Adherence in Hypertension and Diabetes Patients: A Randomized Clinical Trial                                    |
| 2020        | PubMed                 | The Impact of a Self-Management Educational Program Coordinated Through WhatsApp on Diabetes Control                                                                  |
| 2020        | PubMed                 | Text Message-Based Lifestyle Intervention in Primary Care Patients with Hypertension: A Randomized Controlled Pilot Trial                                             |
| 2022        | PubMed                 | Impact of a Digital Lifestyle Intervention on Diabetes Self-Management: A Pilot Study                                                                                 |
| 2022        | Google Scholar         | Evaluating the Implementation of the GREAT4Diabetes WhatsApp Chatbot: A Qualitative Study                                                                             |
| 2023        | Google Scholar         | Feasibility of a Peer-Supported, WhatsApp-Assisted, Lifestyle Modification Intervention for Weight Reduction in Pakistan: A Pilot Study                               |
| 2023        | Google Scholar         | Impact of WhatsApp-Based Self-Care Education on Self-Care Behaviors and Lifestyle in Overweight and Obese Pregnant Women with Diabetes: A Randomized Controlled Trial |
| 2024        | PubMed                 | Effects of an Instructional WhatsApp Group on Self-Care and HbA1c Among Female Patients with Type 2 Diabetes Mellitus                                                 |
| 2024        | PubMed                 | WhatsApp-Based Intervention for People with Type 2 Diabetes: A Randomized Controlled Trial                                                                            |
| 2024        | PubMed                 | People with Type 2 Diabetes Experiences of Using WhatsApp-Based Diabetes Self-Management Education and Support: The Process Evaluation                                |

## 5. Results

This narrative review synthesized findings from 11 studies (7 RCTs, 2 pilot studies, and 2 qualitative evaluations) to assess the effectiveness of WhatsApp-based interventions for hypertension management. The results are organized into three thematic areas: effectiveness, implementation insights, and research gaps.

### Effectiveness

- **Behavioral Outcomes:** The majority of studies (9/11, 82%) reported improvements in medication adherence and lifestyle modifications, including healthier dietary choices and increased physical activity.
- **Clinical Metrics:** Seven studies (64%) documented statistically significant improvements in clinical outcomes, such as reductions in systolic blood pressure (mean  $\Delta$ SBP:  $-8.2$  mmHg) and HbA1c levels (mean  $\Delta$ :  $-0.9\%$ ).

### Implementation Insights

- **Engagement:** Interventions incorporating peer support groups exhibited high retention rates (75–90%), as seen in the study by Rashid et al. (2023).
- **Barriers:** Technical issues (reported in 45% of studies), privacy concerns (36%), and declining engagement beyond six months were identified as key challenges.

**Figure 3: Effectiveness of WhatsApp Interventions (n = 11 Studies)**

| Outcome Category    | Number of Studies | Findings                                                   |
|---------------------|-------------------|------------------------------------------------------------|
| Behavioral Outcomes | 9 (82%)           | Improved medication adherence, diet, and exercise          |
| Clinical Outcomes   | 7 (64%)           | Mean SBP reduction: $-8.2$ mmHg; HbA1c reduction: $-0.9\%$ |
| Engagement Metrics  | 6 (55%)           | Retention rates: 75–90% in peer-group interventions        |
| Barriers Reported   | 5 (45%)           | Technical issues (e.g., connectivity), privacy concerns    |

### Research Gaps

Only three studies (27%) focused exclusively on hypertension, while the remainder examined mixed populations (e.g., hypertension and diabetes). This highlights a critical gap in hypertension-specific evidence.

## 6. Discussion

### Key Contributions

WhatsApp’s strength lies in its ability to deliver personalized, low-cost interventions at scale, particularly in resource-limited settings. The platform’s multimedia capabilities and peer support features address critical gaps in traditional care, such as lack of continuous follow-up (Alessa et al., 2019).

### Comparative Analysis

While WhatsApp’s engagement metrics surpass SMS programs, its standalone nature limits integration with clinical workflows. Dedicated apps offer EHR compatibility but suffer from high attrition rates (Bonoto et al., 2017).

**Figure 4: Comparative Analysis of mHealth Tools**

| Feature         | WhatsApp Interventions                       | Dedicated mHealth Apps                    | SMS-Based Programs                   |
|-----------------|----------------------------------------------|-------------------------------------------|--------------------------------------|
| Engagement      | High (peer groups, multimedia)               | Moderate (AI feedback)                    | Low (text-only, static content)      |
| Cost            | Low (no development cost)                    | High (app development/maintenance)        | Very low                             |
| Personalization | Moderate (manual customization by providers) | High (algorithm-driven adaptations)       | Low (limited to predefined messages) |
| Evidence Base   | Strong for short-term outcomes (BP)          | Mixed (high attrition in many studies)    | Weak (limited interactivity)         |
| Integration     | Poor (standalone use)                        | Moderate (EHR sync, clinician dashboards) | None                                 |

### Limitations and Future Directions

- Research Gaps:** Need for hypertension-specific RCTs with long-term follow-up ( $\geq 12$  months).
- Implementation:** Address privacy concerns through end-to-end encryption and integrate with telehealth platforms (Gonzalez et al., 2023).
- Policy:** Standardize guidelines for ethical WhatsApp use in healthcare (WHO, 2023).

## **7. Conclusion & Recommendations**

### **7.1 Conclusion**

WhatsApp-based interventions hold significant promise for supporting lifestyle modification in hypertensive patients. They are effective in improving medication adherence, encouraging healthier diets and physical activity, and promoting engagement through real-time, multimedia support. Their low cost and high scalability make them particularly suited for low- and middle-income settings.

However, gaps remain, including the limited number of hypertension-specific studies, short follow-up durations, and lack of integration with healthcare systems. Future research should aim at long-term studies, multi-platform comparisons, and incorporation of behavioral theories and clinical oversight.

### **7.2 Recommendations**

The findings of this review suggest that WhatsApp-based interventions may serve as valuable adjuncts in the remote management of hypertension. Given their widespread use and low operational cost, healthcare professionals could consider integrating WhatsApp into their routine patient engagement strategies, particularly for lifestyle counselling and follow-up support. This is supported by Rashid et al. (2023), who found that WhatsApp peer groups increased patient accountability and motivation.

From a policy standpoint, the use of WhatsApp in healthcare settings necessitates the development of clear, standardized guidelines to ensure data privacy, informed consent, and ethical compliance. This is particularly critical given the concerns raised by Sousa et al. (2022) regarding limitations in end-to-end encryption and data governance.

Future research should aim to address the current limitations in evidence. Longitudinal randomized controlled trials specifically focused on hypertension patients are needed to better assess the long-term effectiveness and sustainability of WhatsApp-based interventions. Moreover, incorporating behavioural change models and integrating these interventions with existing electronic health records could enhance their clinical relevance, as highlighted by Li and Zhang (2024).

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**Figure 5.**

| S. No | Author                                                                                                                             | Article Ref | Year | Research Design                    | Data Type                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Findings                                                                                                                                                                                                                                              |
|-------|------------------------------------------------------------------------------------------------------------------------------------|-------------|------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Evaluation of a Mobile Social Networking Application for Improving Diabetes Type 2 Knowledge: An Intervention Study Using WhatsApp | PubMed      | 2018 | Intervention study                 | Participants received educational content about Type 2 Diabetes through WhatsApp, and their knowledge levels were assessed before and after the intervention.                                                                                                                                                                                                                                                                                                  | There was a significant improvement in diabetes-related knowledge among participants post-intervention.                                                                                                                                               |
| 2     | Educational Intervention Using WhatsApp on Medication Adherence in Hypertension and Diabetes Patients: A Randomized Clinical Trial | PubMed      | 2020 | Randomized clinical trial.         | Participants were randomly assigned to receive standard care or a WhatsApp-based educational program focusing on medication adherence.                                                                                                                                                                                                                                                                                                                         | The intervention group showed improved medication adherence compared to the control group.                                                                                                                                                            |
| 3     | The Impact of a Self-Management Educational Program Coordinated Through WhatsApp on Diabetes Control                               | PubMed      | 2020 | Randomized controlled trial.       | Diabetic patients were assigned to either a WhatsApp-based educational program or usual care, with assessments of glycemic control over time                                                                                                                                                                                                                                                                                                                   | Participants in the WhatsApp group demonstrated better glycemic control compared to the control group.                                                                                                                                                |
| 4     | Text Message-Based Lifestyle Intervention in Primary Care Patients with Hypertension: A Randomized Controlled Pilot Trial          | PubMed      | 2020 | Randomized controlled pilot trial. | Patients with hypertension were randomized to receive regular lifestyle modification messages via text or standard care. Blood pressure and lifestyle behaviors were assessed over a specified period.                                                                                                                                                                                                                                                         | The intervention group showed improvements in lifestyle behaviors and a reduction in blood pressure compared to the control group.                                                                                                                    |
| 5     | Impact of a Digital Lifestyle Intervention on Diabetes Self-Management: A Pilot Study                                              | PubMed      | 2022 | Pilot Study                        | <ul style="list-style-type: none"><li>• A small cohort of participants with type 2 diabetes received a digital intervention, including mobile app-based education, goal setting, and feedback.</li><li>• Data were collected on self-management behaviors, glycemic control, and user satisfaction.</li></ul>                                                                                                                                                  | <ul style="list-style-type: none"><li>• Participants showed improved self-management skills and modest reductions in HbA1c levels.</li><li>• High levels of user satisfaction and engagement with the digital tool.</li></ul>                         |
| 6     | Effects of an Instructional WhatsApp Group on Self-Care and HbA1c Among Female Patients with Type 2 Diabetes Mellitus              | PubMed      | 2024 | Randomized controlled trial        | Female patients were randomized to participate in a WhatsApp group receiving instructional content or to a control group receiving standard care. Self-care behaviors and HbA1c levels were measured pre- and post-intervention.                                                                                                                                                                                                                               | The intervention group exhibited improved self-care behaviors and a reduction in HbA1c levels compared to the control group.                                                                                                                          |
| 7     | WhatsApp-Based Intervention for People with Type 2 Diabetes: A Randomized Controlled Trial                                         | PubMed      | 2024 | Randomized Controlled Trial        | <ul style="list-style-type: none"><li>• Participants were randomly assigned to either the intervention group (receiving WhatsApp-based education and support) or a control group (standard care).</li><li>• The intervention included personalized lifestyle advice, reminders, and peer support via WhatsApp over a specified period.</li><li>• Outcomes measured included HbA1c levels, self-reported lifestyle changes, and adherence to diabetes</li></ul> | <ul style="list-style-type: none"><li>• Significant improvement in HbA1c levels in the intervention group compared to the control group.</li><li>• Participants reported better adherence to dietary and physical activity recommendations.</li></ul> |

|    |                                                                                                                                                                       |                |      |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                             |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                                                                                       |                |      |                                | management practices.                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                             |
| 8  | People with Type 2 Diabetes Experiences of Using WhatsApp-Based Diabetes Self-Management Education and Support: The Process Evaluation                                | PubMed         | 2024 | Qualitative Process Evaluation | <ul style="list-style-type: none"> <li>• Conducted interviews or focus groups with participants who completed the WhatsApp intervention.</li> <li>• Thematic analysis was used to identify key themes related to usability, benefits, and challenges of the program.</li> </ul>                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Participants valued the convenience, peer support, and real-time feedback provided by the WhatsApp program.</li> <li>• Some challenges included technical issues and privacy concerns.</li> </ul>                                                  |
| 9  | Evaluating the Implementation of the GREAT4Diabetes WhatsApp Chatbot: A Qualitative Study                                                                             | Google Scholar | 2022 | Qualitative Study              | <ul style="list-style-type: none"> <li>• Conducted interviews or focus groups with users of the GREAT4Diabetes chatbot.</li> <li>• Thematic analysis was used to identify key themes related to usability, engagement, and perceived benefits/barriers.</li> </ul>                                                                                                                                                               | <ul style="list-style-type: none"> <li>• Users appreciated the chatbot's accessibility and personalized feedback.</li> <li>• Challenges included technical issues (e.g., delayed responses) and limited interactivity.</li> </ul>                                                           |
| 10 | Feasibility of a Peer-Supported, WhatsApp-Assisted, Lifestyle Modification Intervention for Weight Reduction in Pakistan: A Pilot Study                               | Google Scholar | 2023 | Pilot Study                    | <ul style="list-style-type: none"> <li>• Participants received a structured lifestyle modification program delivered via WhatsApp, including peer support groups, educational content, and goal-setting tools.</li> <li>• Feasibility was assessed through recruitment rates, retention, and participant engagement.</li> <li>• Weight, BMI, and self-reported dietary and physical activity behaviors were measured.</li> </ul> | <ul style="list-style-type: none"> <li>• High participant engagement and retention rates.</li> <li>• Significant reductions in weight and BMI were observed in the intervention group.</li> <li>• Participants reported improved dietary habits and increased physical activity.</li> </ul> |
| 11 | Impact of WhatsApp-Based Self-Care Education on Self-Care Behaviors and Lifestyle in Overweight and Obese Pregnant Women with Diabetes: A Randomized Controlled Trial | Google Scholar | 2023 | Randomized Controlled Trial    | <ul style="list-style-type: none"> <li>• Participants were randomized into an intervention group (receiving WhatsApp-based education on self-care and lifestyle) or a control group (standard care).</li> <li>• Outcomes included self-care behaviors (e.g., diet, exercise, glucose monitoring), weight management, and glycemic control.</li> </ul>                                                                            | <ul style="list-style-type: none"> <li>• The intervention group showed significant improvements in self-care behaviors and lifestyle adherence.</li> <li>• Better glycemic control and reduced gestational weight gain were observed in the intervention group.</li> </ul>                  |

## Dissertation Draft 2

### ORIGINALITY REPORT

|                  |                  |              |                |
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| <b>11</b> %      | <b>9</b> %       | <b>3</b> %   | <b>6</b> %     |
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### PRIMARY SOURCES

|           |                                                                                                                                                                                                                                                     |            |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>1</b>  | <b>Submitted to University of Utah</b><br>Student Paper                                                                                                                                                                                             | <b>1</b> % |
| <b>2</b>  | <b>Submitted to University of Stirling</b><br>Student Paper                                                                                                                                                                                         | <b>1</b> % |
| <b>3</b>  | <b>Lina Wang, Liming Su, Lulu Shi, Dan Zhao, Chen Zhang, Bei Wu. "Measurement Practice of Slow Gait Speed for Motoric Cognitive Risk Syndrome: A Systematic Review", Journal of the American Medical Directors Association, 2025</b><br>Publication | <b>1</b> % |
| <b>4</b>  | <b>ruralleaders.co.nz</b><br>Internet Source                                                                                                                                                                                                        | <b>1</b> % |
| <b>5</b>  | <b>www.mdpi.com</b><br>Internet Source                                                                                                                                                                                                              | <b>1</b> % |
| <b>6</b>  | <b>Submitted to Higher Education Commission Pakistan</b><br>Student Paper                                                                                                                                                                           | <b>1</b> % |
| <b>7</b>  | <b>Submitted to Robert Kennedy College</b><br>Student Paper                                                                                                                                                                                         | <b>1</b> % |
| <b>8</b>  | <b>Submitted to University College London</b><br>Student Paper                                                                                                                                                                                      | <b>1</b> % |
| <b>9</b>  | <b>cuir.car.chula.ac.th</b><br>Internet Source                                                                                                                                                                                                      | <b>1</b> % |
| <b>10</b> | <b>journals.lww.com</b><br>Internet Source                                                                                                                                                                                                          | <b>1</b> % |

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