

A System of Monitoring Aftercare Patients of Drug Rehabilitation in the Province of Bulacan

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Abstract- Drug rehabilitation programs are essential in addressing substance use disorders, yet the aftercare phase—focused on long-term recovery support—often encounters monitoring challenges. In Bulacan, the Provincial Anti-Drug Abuse Council (PADAC) faces limitations in tracking the progress of aftercare patients. This study aims to bridge these gaps by developing “E-Aftercare Watch Bulacan,” an innovative monitoring system designed to improve patient tracking. Employing an Agile Development Methodology with the Scrum Framework, the system was developed through iterative feedback and design processes. Data was gathered via a census of monitoring personnel using a Researcher-Made Survey Questionnaire to understand user needs. The study anticipates a 20% reduction in relapse rates within six months of implementation, alongside improved satisfaction among monitoring personnel, as indicated by a projected satisfaction score of 85% or higher in post-implementation surveys. Key performance indicators (KPIs) such as relapse rates, user engagement metrics, and qualitative feedback from patients will be used to evaluate the system’s effectiveness. “E-Aftercare Watch Bulacan” equips PADAC personnel with a practical tool to support aftercare patients more effectively, reduce relapse and incarceration rates, and facilitate successful reintegration, contributing positively to the broader goals of criminal justice and community wellness in Bulacan, Philippines.

Keywords: Aftercare monitoring, Drug Rehabilitation, Relapse Prevention, Reintegration, Aftercare patients

1. INTRODUCTION

The “E-Aftercare Watch Bulacan” initiative is grounded in the provisions of Republic Act 9165, known as the Comprehensive Dangerous Drugs Act of 2002. This act establishes the legal framework for preventing and controlling drug abuse while rehabilitating drug dependents. The initiative aims to enhance the effectiveness of aftercare programs by implementing a comprehensive monitoring system that addresses the critical issue of non-compliance within the Provincial Anti-Drug Abuse Council (PADAC) in Bulacan. Additionally, the Dangerous Drugs Board, as outlined in Section 17 of Board Regulation No. 7 of 2019, has established monitoring mechanisms that enhance the aftercare program framework, ensuring adherence to national standards. This initiative responds to the pressing need for improved oversight and support for aftercare patients, particularly in light of challenges such as geographic isolation, societal stigma, and a shortage of dedicated personnel. Ultimately, the primary objective of the “E-Aftercare Watch Bulacan” is to reduce relapse rates and re-incarceration by fostering stronger support structures and leveraging technology to promote successful rehabilitation outcomes across diverse communities.

A comprehensive examination of the challenges associated with non-compliance in drug rehabilitation programs underscores the necessity for a multifaceted approach. This approach integrates critical components such as aftercare monitoring, community support, and family education to enhance rehabilitation outcomes. Nurhotimah (2019) discusses the significant shortage of monitoring personnel, which adversely affects the quality of care and support available to aftercare patients. Furthermore, Asare and Obot (2021) found that technological innovations, such as the “E-Aftercare Watch Bulacan,” have the potential to improve monitoring and facilitate ongoing support for patients. The impact of societal stigma on treatment effectiveness is also addressed, advocating for public education and tailored intervention strategies that consider the diverse challenges encountered by various demographic groups. Nurhotimah (2019) emphasizes the importance of collaborative efforts among stakeholders—including healthcare providers, policymakers, and community organizations—as vital for the successful implementation of rehabilitation initiatives. Statistical data on patient outcomes illustrate the ongoing challenges and successes within the rehabilitation system, providing a critical foundation for evaluating the effectiveness of current practices and informing future research directions (Asare & Obot, 2021). A technological solution designed to enhance monitoring and support for aftercare patients represents a significant contribution. By addressing the critical shortage of monitoring personnel and the challenges faced during the recovery journey, it emphasizes the importance of ongoing engagement and tailored interventions to prevent relapse and incarceration (Leghari, 2021; Brooks & Greenberg, 2020). Additionally, it provides valuable insights into the integration of data-driven approaches and community involvement, fostering a more effective and sustainable framework for supporting individuals recovering from substance use disorders (Adams & Warren, 2020). Ultimately, it advocates for policy improvements and resource allocation, benefiting not only the patients but also their families, healthcare providers, and the broader community in Bulacan (Hechanova et al., 2023). This research offers significant contributions to the field of substance abuse treatment and rehabilitation by underscoring the impact of technology, community involvement, and personalized care in aftercare programs. By highlighting the critical need for enhanced monitoring personnel, comprehensive treatment policies, and community support, the study aims to address systemic gaps that contribute to high relapse and incarceration rates among aftercare patients. Furthermore, the proposed “E-Aftercare Watch Bulacan” initiative illustrates how technology can facilitate continuous engagement and support, ultimately improving patient outcomes and fostering a more effective rehabilitation framework. The study provides actionable recommendations for policymakers and practitioners, aimed at strengthening rehabilitation strategies and fostering a supportive environment that promotes sustained recovery. Additionally, it establishes a foundation for future studies focused on enhancing aftercare approaches and addressing the broader societal impacts of substance abuse.

2. LITERATURE REVIEW

2.1 Factors Influencing Rehabilitation Outcomes

2.1.1 Patient-Focused Monitoring: Nurhotimah (2019) underscores the importance of patient-focused monitoring in aftercare settings. The study reveals that consistent and personalized follow-ups enhance patient engagement and improve rehabilitation outcomes. Structured aftercare programs are recommended to ensure continuous support, fostering better relationships between patients and monitoring personnel.

2.1.2 Community and Family Support: Asare and Obot (2021) emphasize the role of community and family support in managing substance use disorders. Their study finds that involvement from family and community members reduces relapse rates and strengthens patient commitment to rehabilitation. This research advocates for training monitoring personnel to actively involve family members, creating a support network that aids in the patient’s recovery journey.

2.2 Monitoring Personnel Challenges: **2.2.1 Shortage of Personnel:** Taylor et al. (2019) explores the effects of understaffing on aftercare programs, reporting that limited personnel often result in communication gaps and diminished patient engagement. They recommend addressing staffing issues through recruitment and targeted training, suggesting that a robust workforce is crucial for effective aftercare.

2.2.2 Communication Barriers: McLellan et al. (2023) identify communication barriers between monitoring personnel and patients as a significant obstacle in aftercare programs. Effective communication fosters understanding of patient needs and adherence to treatment protocols. The study recommends implementing systematic communication approaches to enhance patient interaction and support.

2.3 Innovative Approaches to Aftercare: **2.3.1 Technological Integration:** Brooks and Greenberg (2020) propose leveraging technology to streamline communication and monitoring in aftercare settings. Their research highlights the benefits of data analytics and automation, showing that timely interventions can reduce relapse rates and improve patient outcomes. This approach emphasizes the potential of digital tools in delivering efficient, patient-centered care.

2.3.2 E-Aftercare Watch Bulacan: The “E-Aftercare Watch Bulacan” initiative exemplifies the integration of technology in aftercare through a digital monitoring platform. According to Gagne (2014), the platform enables remote tracking of patient progress, allowing for proactive interventions by monitoring personnel. This system seeks to reduce relapse rates and enhance compliance, representing a significant advancement in the field.

2.4 Addressing Stigma and Barriers: **2.4.1 Stigma and Its Impact:** Lloyd (2017) examines the impact of societal stigma on individuals undergoing substance use disorder treatment. The study indicates that stigma discourages individuals from seeking help and participating in aftercare programs, thereby affecting rehabilitation outcomes. The research suggests that anti-stigma strategies are necessary to encourage patient engagement and promote sustained recovery.

2.4.2 Socio-Economic Challenges: Hechanova et al. (2023) discusses the socio-economic challenges faced by rehabilitation patients in the Philippines. Limited financial resources and accessibility issues hinder the effectiveness of aftercare programs. The study calls for tailored approaches that address these socio-economic factors, ensuring that aftercare support is accessible and equitable for all patients.

3. METHODOLOGY

3.1 Research Design : The study’s researcher employed a quantitative research design to rigorously assess the effectiveness of the “E-Aftercare Watch Bulacan” system. This approach involved systematically collecting and analyzing numerical data to evaluate various aspects of the system’s performance and its

impact on the target population. By utilizing surveys and structured questionnaires, the researcher gathered measurable data from participants, allowing for a comprehensive analysis of user experiences and satisfaction levels with the system. The quantitative design enabled the researcher to quantify the effectiveness of key features, such as Real-Time Data Capture and Remote Monitoring, and to establish correlations between the use of these features and improvements in aftercare support. Additionally, the use of statistical methods facilitated objective conclusions regarding the overall efficacy of the system in meeting the needs of aftercare patients and the Provincial Anti-Drug Abuse Council (PADAC). This methodical approach not only provided insights into the practical implications of the system but also contributed to the development of evidence-based recommendations for future enhancements, ensuring that the "E-Aftercare Watch Bulacan" system effectively addresses the challenges faced by its users.

3.2 Population and Locale of the Study : The population of the study comprised ninety-six (96) respondents who were employed in the Provincial Anti-Drug Abuse Council (PADAC) in Bulacan involved in the study. Specifically, the respondents encompassed the Service Providers, including Monitoring Personnel, City Social Welfare Workers/Officers, City Health Officers, and Officers-in-charge of the Public Employment Service Office (PESO). The sample size was determined based on the availability of monitoring personnel, social workers, and health officers actively engaged in aftercare monitoring. By including a diverse range of respondents, the study aims to capture a comprehensive view of the stakeholders' perspectives. However, it is important to acknowledge that the reliance on convenience sampling may introduce potential biases, as those who volunteered to participate may have a stronger interest or more positive experiences related to aftercare monitoring, which could affect the generalizability of the findings. The study was conducted across the entire province of Bulacan, covering all twenty (20) municipalities and four (4) cities. These include Angat, Balagtas, Baliwag City, Bocaue, Bulakan, Bustos, Calumpit, Dona Remedios Trinidad, Guiguinto, Hagonoy, Malolos City, Marilao, Meycauayan City, Norzagaray, Obando, Pandi, Paombong, Plaridel, Pulilan, San Ildefonso, San Jose Del Monte City, San Miguel, San Rafael, and Santa Maria. The study was carried out under the support of the Provincial Anti-Drug Abuse Council (PADAC) in Bulacan.

3.3 Data Gathering Tools: The researcher of the study used a Researcher Made Survey Questionnaire to elicit data to measure the extent of usability of the "E-Aftercare Watch Bulacan" system and to evaluate its effectiveness in achieving the desired outcomes within the Criminal Justice System. This approach provided a valuable opportunity for direct interaction with the study's respondents, enabling a deeper understanding of their real-life experiences and nuanced responses.

3.4 Data Gathering Procedure: The researcher sought approval from the Provincial Anti-Drug Abuse Council (PADAC) in Bulacan, specifically from the Monitoring Personnel, for the implementation of the "E-Aftercare Watch Bulacan." After securing consent, the researcher consulted her academic advisors for guidance. The system was developed over three months and then pilot tested with twenty respondents outside Bulacan. A survey questionnaire, which scored an average of .90 on Cronbach's Alpha, was used to evaluate the system's efficacy using various Key Performance Indicators (KPIs). PADAC utilized the system from January to March 2024 to monitor aftercare patients. Following this trial, feedback was collected through surveys. The researcher anticipated challenges such as maintaining participant engagement and ensuring the system's user-friendliness. Ethical standards were upheld through confidentiality discussions and consent forms, complying with the Data Privacy Act of 2012. Collected quantitative data were analyzed using descriptive statistics, including mean and standard deviation.

3.5 Treatment of Data

The data analyses involved the evaluation of quantitative data gathered through the researcher's made survey questionnaire, utilizing the following statistical methods.

- 1. Frequency:** Frequency, as defined by Salkind (2010), was utilized to quantify the frequency of occurrences of a specific element within each dataset.
- 2. Percentage:** Percentage, as described by statcan.gc.ca (2015), was employed as one of the most common methods to epitomize statistics. The term "percent" signified "per hundred," and the symbol '%' was used to express the percentage.

$$\text{Formula : } P = \frac{F}{N} \times 100\%$$

Where :

F= Number of respondents under category (Frequency)

N= Number of respondents (Sample)

- 3. Weighted Mean:** Weighted mean implied an average, and it was the sum of a set of data divided by the amount of data.

$$\text{Formula: } M = \frac{\sum fx}{N}$$

Where:

M= mean

\sum = summation

x= weight of each scale

N= total number of respondents

4. 5 Point Likert Scale

The researcher employed a 5-point Likert scale to assess the respondents' responses for the "E-Aftercare Watch Bulacan".

3.6 Ethical Consideration

The ethical principles governing this research emphasized informed consent, privacy, and utmost respect for the rights of respondents. Voluntary participation was ensured, with informed consent diligently sought and respected prior to the study's commencement.

Confidentiality assurances were provided, and it is important to note that no financial incentives were offered to respondents or others involved in the study. The purpose of the "E-Aftercare Watch Bulacan" was achieved through the dedicated efforts of the researcher, conducted without any financial inducements, as such practices could compromise the veracity and fairness of the research. This study adhered to rigorous legal and ethical standards, ensuring fairness and impartiality in all methods employed. During orientation sessions, respondents were informed about their right to withdraw from the study at any time, with the option to communicate their decision verbally or in writing. Additionally, explicit permission was required for any documentation, including photographs taken during data collection. All collected data was stored securely on the researcher's devices and handled with the utmost confidentiality. This research not only aimed to contribute to the advancement of knowledge in the field of criminology but also exemplified an unwavering commitment to ethical research practices, underscoring informed consent, privacy, and respect for respondents' rights as foundational principles.

4. RESULTS AND DISCUSSION

The analysis of the framework components for the **E-Aftercare Watch Bulacan** provides key insights into its structure and effectiveness in supporting aftercare patients. The data in Table 1, outlines the frequency and percentage of each framework component as identified through the survey.

Table 1: Framework Components for the "E-Aftercare Watch Bulacan"

Framework Components	Frequency	Percent
Aftercare Patient Records Management	8	8.3
Communication Platforms	5	5.2
Real-time Data Capture	12	12.5
Dashboard for Visualizations	9	9.4
Aftercare Patient-Reported Outcomes	8	8.3
Compliance Tracking	7	7.3
Remote Monitoring via Live Website	8	8.3
Aftercare Patient Relationship Management	8	8.3
User Testing and Scenario Simulations	6	6.3
Bug Reporting System	6	6.3
Usability Testing for Functionality	4	4.2
Continuous Monitoring Dashboard	6	6.3
Aftercare Patient-Focused Monitoring	3	3.1
Accessibility and Inclusivity	3	3.1
Mobile Responsiveness	3	3.1
Total	96	100.0

The total frequency of 96 components indicates a comprehensive approach to aftercare management. This indicates that the framework addresses multiple aspects of the monitoring system, ensuring all critical elements—such as patient tracking, data management, and community support—are included to provide a holistic solution for aftercare patients.

Discussion

The Aftercare Patient Records Management component, comprising 8.3% of the responses, is critical for ensuring the accuracy and timeliness of patient data. This feature highlights a transition from traditional record-keeping methods to a more structured and secure system. Effective management of patient records supports continuity of care and enhances treatment planning, which is essential for improving outcomes for aftercare patients. The importance of Real-time Data Capture cannot be overstated. With a frequency of 12, it allows for timely decision-making and operational efficiency. The ability to capture and utilize data in real-time minimizes errors and optimizes processes, which is vital in addiction recovery contexts. As noted by Carriedo (2023), real-time data capture enhances operational efficiency by providing the most current information, which is essential for addressing patient needs effectively. Additionally, the Dashboard for Visualizations (9.4%) enhances the ability of aftercare patients and monitoring personnel to interpret and analyze relevant data quickly. This capability facilitates efficient decision-making and continuous monitoring of patient progress. Estipona (2023) emphasizes that real-time visualization capabilities enable quick interpretation and analysis of aftercare patient data, which improves communication and reduces treatment delays. The framework is also user-centric, prioritizing the needs and experiences of aftercare patients and monitoring personnel. This ensures that the system is practical, accessible, and responsive to their specific challenges and requirements. By incorporating feedback from users, the framework aims to create a more effective and supportive aftercare environment. Furthermore, the framework aims at stigmatizing reduction. By fostering a more supportive environment, it helps reduce the number of relapses and incarcerations, promoting sustainable recovery and minimizing the likelihood of aftercare patients returning to substance use or facing legal consequences. This aspect is crucial in encouraging patients to engage with aftercare services without fear of judgment or negative repercussions. The integration of Communication Platforms (5.2%) and Compliance Tracking (7.3%) further enhances the framework's effectiveness. These components foster proactive communication between aftercare patients and monitoring personnel, ensuring that patient needs are promptly addressed. The Remote Monitoring feature (8.3%) underscores the growing importance of accessible aftercare approaches, particularly in a digital age where convenience can significantly impact patient engagement and adherence to treatment plans. The E-Aftercare Watch Bulacan framework demonstrates a commitment to utilizing technology to improve aftercare services. By focusing on real-time data capture, effective patient records management, and intuitive visualization, the framework addresses key challenges in traditional aftercare approaches, empowering both patients and monitoring personnel to achieve better outcomes.

5. CONCLUSION

A comprehensive digitalized and integrated framework was developed to significantly enhance the monitoring and support of aftercare patients in drug rehabilitation programs. This innovative system facilitates real-time data capture, allowing for timely and accurate information collection regarding patients' progress. Additionally, it promotes personalized communication between healthcare providers and patients, fostering a supportive environment tailored to individual needs. To effectively implement the "E-Aftercare Watch Bulacan" system, a comprehensive strategy should focus on stakeholder engagement and training. Engaging stakeholders through workshops and forming a committee can foster collaboration and ensure buy-in from all relevant parties, including healthcare providers and community leaders. Additionally, developing training modules and conducting hands-on sessions will equip monitoring personnel with the necessary skills to utilize the system effectively. Pilot testing in selected municipalities will allow for iterative feedback, enabling adjustments based on real-world challenges before broader deployment. Moreover, establishing a robust technical support infrastructure and a monitoring and evaluation framework is crucial for long-term success. A dedicated technical support team can address issues promptly, while clear KPIs will facilitate ongoing assessments of the system's effectiveness. Ethical considerations should also be prioritized by ensuring informed consent and confidentiality measures are in place. Finally, raising community awareness through public campaigns will foster a supportive environment for aftercare patients, ultimately enhancing recovery outcomes and reducing stigma associated with substance use disorders. Furthermore, remote monitoring capabilities enable continuous oversight of patients' well-being, ensuring that any issues can be promptly addressed. Overall, this multifaceted approach aims to improve the overall effectiveness of aftercare support, ultimately contributing to better recovery outcomes for individuals in drug rehabilitation programs.

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