Increasing Psychiatric Clients' Patient Portal Enrollment to Improve Engagement in Care and Treatment Effectiveness

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Abstract

Despite efforts to increase psychiatric clients' Patient Portal (PP) use, many clients are not enrolled, which may limit their engagement in care, treatment effectiveness, and perpetuate health disparities. Since research demonstrates benefits of PP engagement in healthcare, increasing PP enrollment is timely to safely bridge care during the coronavirus disease 2019 (COVID-19) pandemic and beyond. However, some results are mixed. A quality improvement (QI) project was conducted at a private mental health outpatient organization with the aim of increasing the number of clients enrolled in the PP from 5,595 clients on December 31, 2020 to 7,000 clients by April 22, 2021. Interventions were adapted through Plan-Do-Study-Act (PDSA) cycles based on the *Model for Improvement*. Data queried from the organization's PP database was analyzed at baseline (December 31, 2020) and following interventions. The interventions included 1) when office staff called clients to verify their health insurance from January to April 2021, they also requested missing emails and sent the PP enrollment invitation. 2) In February and March, office staff were provided a list of clients without emails on file to collect when the client called or as time permitted. Results show the aim of increasing PP enrollment was met, with a total of 8945 clients enrolled. While limitations require consideration, this QI project suggests practice-based interventions that may increase PP enrollment as the first step towards PP engagement to improve outcomes. Further PP research in vulnerable populations is needed for modifications to address health disparities.

Keywords: mental health, psychiatric, behavioral health, patient portal, enrollment, engagement, meaningful use, health outcomes, quality improvement

Increasing Psychiatric Clients' Patient Portal Enrollment to Improve Engagement in Care

and Treatment Effectiveness: A Quality Improvement Project

Many psychiatric clients remain unenrolled in the Patient Portal (PP) despite encouragement by mental health organizations to use this resource. Consequently, delayed care, miscommunication, and safety issues contribute to poorer outcomes. Engaging clients in their care through the PP is paramount and timely since the coronavirus disease 2019 (COVID-19) pandemic forced the transition from in-person to virtual appointments. Furthermore, many organizations will continue services virtually instead of/in addition to in-person after the pandemic is managed. Thus, this quality improvement (QI) project aims to increase psychiatric clients' PP enrollment to improve client engagement, treatment effectiveness, and outcomes.

Available Knowledge

A literature review was conducted to identify barriers and facilitators to PP enrollment, health outcomes related to PP use, and interventions to improve PP engagement. In November and December 2020, evidence-based articles were searched on Google Scholar, PubMed, and ScienceDirect using the search terms "mental health," "behavioral health," "patient portal," "engagement," "meaningful use," and "health outcomes." Filters included full articles since 2015 and suggested relevant studies were also reviewed.

Most studies evaluated PP use by people with physical health disorders in primary care and inpatient settings, however there is a paucity of research on use by psychiatric populations (Strudwick et al., 2020). Historically, psychiatric patients have been vulnerable to stigma, reluctance of providers to share psychiatric notes, and inequities in healthcare access (Antonio et al., 2019, as cited in Strudwick et al., 2020, p. 397). These obstacles likely contribute to later PP adoption, evaluation, and less research considering PP development for psychiatric populations.

Before the pandemic, mental health services were chronically undervalued and underfunded, as less than 2% of countries' national health budgets were spent on mental health despite unmet needs (Brunier & Drysdale, 2020). Likewise, annual losses of almost $1 trillion in economic productivity resulted from depression and anxiety, whereas investing in evidence-based treatments of these conditions save money e.g., $5 returned for every $1 paid. Finally, mental health services were considered "essential" when the pandemic disrupted critical services and exacerbated mental health issues.

 Notably, a survey of United States (US) adults found COVID-19 related morbidity, mortality, and strategies to lower the curve (e.g., social distancing, quarantine) were associated with increased mental health issues, suicidal ideation (SI), and substance use (Czeisler et al., 2020). Disproportionally worse mental health issues and outcomes were reported by unpaid caregivers for adults, ethnic/racial minorities, young adults aged 18-24 years, and essential workers. Additional vulnerable populations include older adults (65 years and above), low socioeconomic status, chronic conditions, obstacles to accessing care, and low literacy in health, numbers, and technology (Czeisler et al., 2020; Showell, 2017, as cited in Grossman et al., 2019, p. 856;). Despite aspirations to reduce health inequities by addressing barriers to care with PP features (e.g., 24/7 access, messaging), PPs are less frequently used by vulnerable populations.

Many studies found electronic health record (EHR) benefits of quality improvement (QI) in patient safety, transparency, quicker communication, shared decision-making, and health outcomes (Grossman et al., 2019; Han et al., 2019; Kruse et al., 2015). Therefore, more studies are examining the role of EHRs in facilitating patients' engagement in care through the PP. Many benefits of PP use by people with physical health conditions were found, including improvements in medication adherence and disease management (Han et al., 2019; Strudwick et

al., 2020). A systematic review of outcomes from patients' uses of electronic health (eHealth) tools for self-reporting found significantly increased positive medication changes, improved symptoms after use, and potentially increased self-efficacy (Lancaster et al., 2018). Research consistently supports significantly improved behavioral outcomes e.g., medication refill adherence, likelihood of preventive care engagement due to PP interventions (Han et al., 2019). Increasing evidence shows that patient engagement yields improved health outcomes and lower health costs when paired with government reforms to improve healthcare (Irizarry et al., 2015).

Furthermore, Meaningful Use (MU) of interoperable EHR functions to improve health outcomes and quality of care was supported by federal financial incentives to health care organizations (Centers for Disease Control and Prevention [CDC], 2020; CDC, 2021). Per MU, organizations are required to ensure patients have access to see, download, and send their health records. PPs include these functionalities plus features e.g., medication refill requests, appointment scheduling, test results (Office of the National Coordinator, 2014, as cited in Kruse et al., 2015, p. 2). Thus, the interoperability between EHRs and PPs can also support measurement-based care.

Meanwhile, some studies found mixed or insignificant impacts of PP interventions on client outcomes (Han et al., 2019). A systematic review yielded inadequate evidence of PP use improving clinical outcomes like hypertension despite improving some mental health outcomes, medication adherence, and use of preventive services (Han et al., 2019). Psychological outcomes significantly improved with PP intervention included increased health knowledge, decision making, and self-efficacy, whereas no significant differences were found in patient activation nor behavioral goal attainment. Despite some positive benefits of eHealth tools, there was insufficient evidence of improvements in patient's overall health, satisfaction, quality of life,

health care utilization, medication adherence, or side effects (Lancaster et al., 2018) found. Inconsistent results about PP impacts on clients may result from study limitations such as small sample size and challenges evaluating quality of care outcomes with mostly subjective rather than objective measures (e.g., consumer-based data analytics) (Tsai et al., 2019).

Further research is needed on PP benefits in mental health settings, quality-of-care indicators, helpful features, and relationships with demographics. Special considerations are also needed to develop and modify PP features for psychiatric populations. To improve PP use, studies of multi-component and combined interventions are needed to address system interactions (e.g., environment) (Grossman et al., 2019). Over 100 studies demonstrate disparities in PP use by disadvantaged populations, however research needs to directly measure the impact of interventions on disparities to alleviate health inequities (Grossman et al., 2019).

Rationale

This QI project uses the Associates in Process Improvement's *Model for Improvement* to guide QI of healthcare processes and outcomes in the real world. After identifying an aim, measures of improvement, and changes to test, small-scale tests called Plan-Do-Study-Act (PDSA) cycles are conducted (Institute for Healthcare Improvement [IHI], n.d.b.; IHI n.d.c.). PDSA cycles entail planning a change, testing the change, evaluating the results, then modifying the change based on lessons learned. Furthermore, the Institute of Medicine report *Crossing the Quality Chasm: A New Health System for the 21ˢᵗ Century* highlights six *Aims for Improvement* to address discrepancies between good health care vs. the actual care people receive (IHI, n.d.a.). Systematic changes are necessary to achieve the *Aims for Improvement*: safe, effective, patient-centered, timely, efficient, and equitable health care.

Aims

This QI project aims to increase the number of psychiatric clients enrolled in the PP from 5595 clients on December 31, 2020 to 7,000 clients by April 22, 2021. Achieving this aim is expected to improve the *effectiveness* of psychiatric clients' care, defined as applying evidence-based techniques, by increasing PP engagement which begins with enrollment.

Methods

Context

This QI project was conducted at a private mental health outpatient organization with 19 clinics serving communities across metropolitan Portland, OR and Vancouver, WA. This organization contracts with most health insurances to provide psychiatric services i.e., therapy, medication management, and programs e.g., for autism, school-based services. Their aim is to provide clients with high quality, accessible psychiatric care to promote positive outcomes.

The organization gradually launched the NextGen EHR and PP in 2016, which allows clients to send/receive secure messages, view appointments, view and pay bills, access medical information, and request changes. Since then, intake paperwork was sent to new clients via DocuSign, which saved their basic information in the PP database. Although the PP is meant to improve clients' care and access, the enrollment process can be inefficient for staff and clients. Challenges include lack of PP enrollment automation, multiple ways for clients to enroll and for staff to verify their status, and system idiosyncrasies. Technological and health literacy of clients and staff also vary. Many clients do not respond to enrollment emails, whereas some clients such as older adults do not have an email or use it. Furthermore, mental health conditions like depression can interfere with clients' concentration, motivation, and PP enrollment completion.

Additional factors contributing to lower PP enrollment may include inconsistent training of office staff and providers across sites, discrepancies in practice, miscommunication, limited time, competing responsibilities, and resistance. Although secure PP messaging facilitates direct and timely client-provider communication, use varies. Providers' concerns include increased workload, excessive messages, clients seeking care by messages rather than appointments, limitations to client assessment, and resistance to being forced to use the PP. Thus, interactions between the organization, PP, clients, staff, and environmental factors impact enrollment.

Interventions

Previous interventions tested by the organization to increase PP enrollment were considered as they could interact with and/or confound impacts of the current project. Since the switch from in-person to virtual appointments in March 2020 due to COVID-19, the sites manager instructed office staff to collect new clients' emails. This intervention was modified to collect all clients' emails. Then, JotForm intake paperwork was sent to adult clients since December 5, 2020 and to children/adolescents since March 4, 2021 (DocuSign was still sent to some clients). Benefits of JotForm included collecting more comprehensive information at lower costs. Since December, office staff were instructed to email the PP enrollment invitation to all new clients, regardless of their response to the corresponding question on JotForm.

In the current project, QI interventions were implemented at the psychiatric organization in PDSA cycles since November 2020 and modified for contextual changes. Interventions were developed with the organization's VP of Operations, Medical Director, Training/Support Specialist, Clinical Sites Manager, and a Site Office Manager. Originally, the plans included emailing providers a guide to verify clients' PP enrollment status and encourage enrollment, simplifying the PP enrollment instructions, and revising the PP enrollment question and

placement on intake paperwork. However, in December the company announced a merger with another psychiatric organization, which will include a new EHR and PP in June 2021.

Hence, the interventions were altered to be relevant following the merger. A website blurb was written to inform clients about the PP transition in June, however administration decided it was too early to release these changes. Next, suggested interventions included adding a PP tab on the website, and buttons for PP enrollment and login. While these interventions initially seemed feasible, the team decided technological costs and energy outweighed benefits. Finally, the interventions evolved into 1) When the office staff called clients to verify their health insurance (January to April 2021), they also requested clients' emails if not on file and sent PP enrollment instructions. 2) In February and March, office staff were provided a list of clients without an email on file and collected emails when the client called or as time permitted.

Measures

Client PP enrollment data was queried from the organization's PP database, derived from DocuSign and JotForm. Client engagement was defined by the outcome measure: the number of clients enrolled in the PP at baseline and following interventions. The baseline was defined as: the total number of clients enrolled in the PP from March 2016 to December 31, 2020. Data was collected until April 22, 2021. Process measures were defined as the number of clients enrolled in the PP and the number of client emails obtained. Balancing measures included ensuring office staff were not overwhelmed by the added interventions and could still complete their responsibilities in a timely manner.

Demographic measurements included age, gender, and relationship status. The JotForm responses measured included: Whether clients want to be emailed PP enrollment information, and whether prescription medications were taken (see Figures C1 and C2).

Analysis

Clients' PP enrollment was analyzed using Microsoft Excel. Descriptive statistics compared the number of clients enrolled during baseline (March 2016 to December 2020), after the interventions (January to April 2021), 2020, since the COVID-19 pandemic (March 2020 to April 22, 2021), and since the PP was launched (March 2016 to December 2020). The Pearson product-moment correlation was measured between time since the pandemic and the number of PP enrollments by April 22, 2021. Demographic factors and responses to the PP enrollment email and prescription questions were analyzed (see Measures and Appendices A to D).

Results

Following PDSAs, the final interventions included 1) while calling clients to verify health insurance, the office staff also asked for the client's email if it was not on file and sent PP enrollment instructions. 2) In February and March, the office staff were provided a list of clients without an email on file and collected the emails when the client called or as time permitted.

Analysis of the PP enrollment data showed 5595 clients enrolled in the PP by December 31, 2020 and 8945 clients enrolled in the PP by April 22, 2021 (see Appendix A). See Appendix A for descriptive statistics about clients' enrollment in the PP during specified periods. Since the COVID-19 pandemic began in March 2020, the highest number of clients enrolled in the PP per month began in December 2020 and increased monthly until February 2021 (See Figures B1 and B2). The April count was incomplete. A strong positive correlation was found between time in months since the pandemic and the number of clients enrolled in the PP by April 22, 2021 ($r(12)$ = .87, N = 5331, M = 380.79, SD = 334.2). Further, the number of clients enrolled in the PP increased yearly from 2016 to 2021, except was lower during 2019 (see Figures B3 and B4).

During the intervention from January 1, 2021 to April 22, 2021, clients' PP enrollment increased ($M = 837.5$, $SD = 169.06$, $N = 3350$) compared to in 2020 ($M = 178.75$, $SD = 414.71$, $N = 2145$).

Demographic variables and the PP email enrollment question were analyzed from JotForm data, whereas age also included DocuSign data (see Figures D1 to D3, Figures C1 and C2). In response to the intake question of whether clients want to be emailed information to enroll in the PP, 87.75% of clients responded yes, 8.17% responded no, and 4.08% did not respond (see Figure C1). Over half of the clients took prescription medications, per Figure C2 (62.98% vs 34.17% no, 2.85% did not respond). Figure D1 indicates most clients were in the 18-64 years age group (86.61% vs 3.78% ages 65 and older, 3.73% ages 15-17, 2.94% ages 12-14, 2.76% ages 6-11, 0.19% ages 0-5, $N = 8926$). In Figure D2, a higher percentage of clients identified as female than other genders (64% vs 29% male, 3% nonbinary, 0.4% transgender, 4% did not respond, $N = 2277$). The most common relationship statuses reported were single (42%) or married (39.4%), as exhibited in Figure D3 (6% divorced, 5.82% living as married, 3.27% did not respond, 2.59% separated, 0.95% widowed).

Discussion

Summary

The aim of increasing clients' PP enrollment from 5595 on December 31, 2020 to 7,000 by April 22, 2021 was met and exceeded by 1,405 enrollments. Opening the door to PP engagement through enrollment, and the next step of PP use is projected to improve the effectiveness of clients' care. The QI interventions appeared to improve client engagement as indicated by the outcome measure of increased clients enrolled in the PP. However, it was challenging to distinguish the impact of each PDSA cycle on the outcome as cycles build upon each other and circumstances constantly change. Thus, conducting practice-based QI is as

chaotic as the world around it. Similar studies in mental health populations are needed to verify the reliability of these results, test additional interventions, and provide recommendations.

Strengths of this project include the supportive team, large dataset, and applicability to future QI. Positive team members from diverse positions stimulated thoughtful solutions despite unanticipated changes. Benefits of this large retrospective dataset include greater precision, power, reliability, and validity. Thus, findings are generalizable to organizations and clients with similar characteristics as the population studied e.g., psychiatric outpatient.

Interpretation

As expected, PP enrollment increased following the QI interventions of office staff requesting clients' emails to send PP enrollment information during insurance verification calls and following up on a list of clients without emails on file. While the interventions appeared to increase PP enrollment more than expected, confounding factors may have contributed (e.g., preceding interventions in December 2020 of adding JotForm and sending the PP enrollment email to all clients regardless of their response to the corresponding question).

The trend of PP enrollment increasing during winter months seems to coincide with the trend of increased mental health services sought during the winter due to exacerbation of illnesses by the weather and holidays. In contrast however, PP enrollment continued to increase from January to March 2021 (and potentially April) following the spike in enrollments in December 2020. This exception may be related to the effectiveness of the interventions as well as/or confounding factors. Perhaps the organization merger incited increased pressure to collect clients' emails, which are required to transition to the new PP in June.

Following an upward trend of PP enrollment from 2016 to 2018, enrollment decreased in 2019. Then, enrollment gradually increased in 2020 during the pandemic and exceeded record

highs in December. The organization's chief financial officer reported a higher demand for psychiatric services since the pandemic, which Brunier & Drysdale (2020) also found. Additionally, a survey of adults revealed mental health issues were triggered or worsened by the pandemic and unintended consequences of safety measures (Brunier & Drysdale, 2020; Czeisler et al., 2020). Thus, these relationships may also explain the drastic increase in PP enrollment.

Limitations

This project was limited by the COVID-19 pandemic and merger between mental health organizations, which impacted investment, readiness for change, and interventions. Our QI team was excited to increase PP enrollment, however a project with the new PP in June 2021 would have been more valuable. While awaiting feedback, time was inefficiently spent on interventions that did not surpass the preliminary PDSA stages. Thus, interventions were adjusted to increase PP enrollment regardless of the system. Moreover, the pandemic limited communication to virtual means. Consequently, challenges in timely communication, planning, and implementation complicated the project.

Likewise, data and interpretation were limited by unclarified details about the PP enrollment process. Specifically, the total number of clients at the organization was needed to compare the percentage of clients enrolled in the PP versus not enrolled. Also, the process measure of the number of client emails obtained after office staff called clients compared to before was not available. It is unclear why DocuSign continues to be used for some clients despite greater benefits of JotForm, and how it is decided which form clients are sent. Staff provided approximate dates of previous interventions however a record was not available, thus limiting the interpretation of historical data trends and comparisons between interventions.

Demographic comparison was limited with less data collected by DocuSign than JotForm. As the size and duration of this data is lower, it may be less representative of the population. Additionally, fewer demographic variables were coded and analyzed than planned due to the short project duration e.g., race/ethnicity, primary health insurance, psychiatric conditions, medical conditions, education level, etc. To minimize threats to validity and reliability, missing data was coded as *do not respond*. *Test* subjects were also omitted.

Conclusions

This QI project met the aim of increasing psychiatric clients' PP enrollment as a measure of engagement which research suggests can improve the effectiveness of care. This improvement can be sustained by continuing to group client PP enrollment questions with calls for other reasons and providing office staff a monthly list of clients to follow up with. This project contributes to the limited literature of psychiatric clients' engagement in the PP and has implications for increasing enrollment through practice-based interventions. PDSA cycles were used to adapt interventions despite the pandemic and upcoming organization merger.

Recommended next steps include clarifying information about the data to interpret results more accurately and simplifying the JotForm data (i.e., filter and code variables) to ease analysis. Then, relationships between PP enrollment, demographics, and responses to intake questions can be analyzed. Next, interventions tested by PDSAs should be tailored for all clients to succeed. Recommended future QI projects with the new PP include training two office staff per clinic as superusers, who can then train and support patients and staff in using the PP.

Funding

No funding was provided for this QI project.

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Appendix A

Descriptive Statistic	Baseline	Interventions	2020	COVID-19	Patient Portal Live
M	98.16	837.5	178.75	380.79	146.64
Median	84	879	143.5	184	94
SD	92.89	169.06	141.71	334.20	208.65
N (Clients)	5595	3350	2145	5331	8945
Months	57	4	12	14	61

Appendix A. Descriptive statistics of clients' enrollment in the PP during baseline (March 18, 2016 to December 31, 2020), the PDSA interventions (January to April 2021), the preceding year (2020), the COVID-19 pandemic (March 2020 to April 22, 2021), and since the PP was launched (March 18, 2016 to April 22, 2021).

Appendix B

Patient Portal (PP) Enrollment Trends
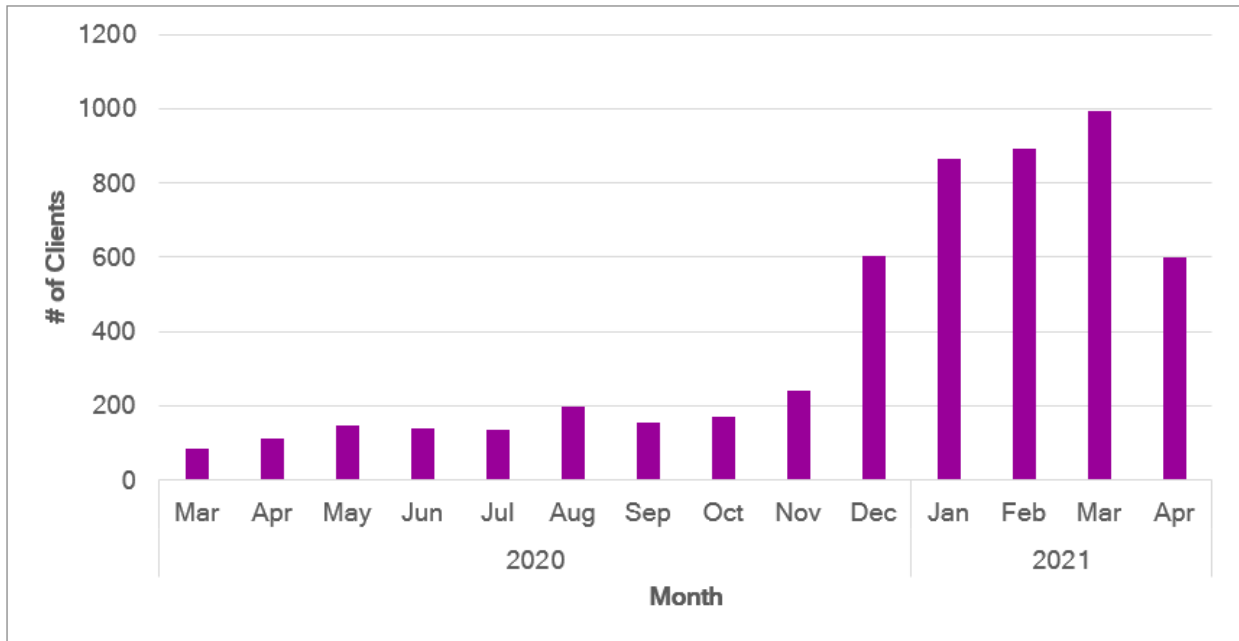
Figure B1. Bar chart of the number of clients enrolled in the PP monthly from March 2020 when

the COVID-19 pandemic began to April 22, 2021. The April count is lower as incomplete.
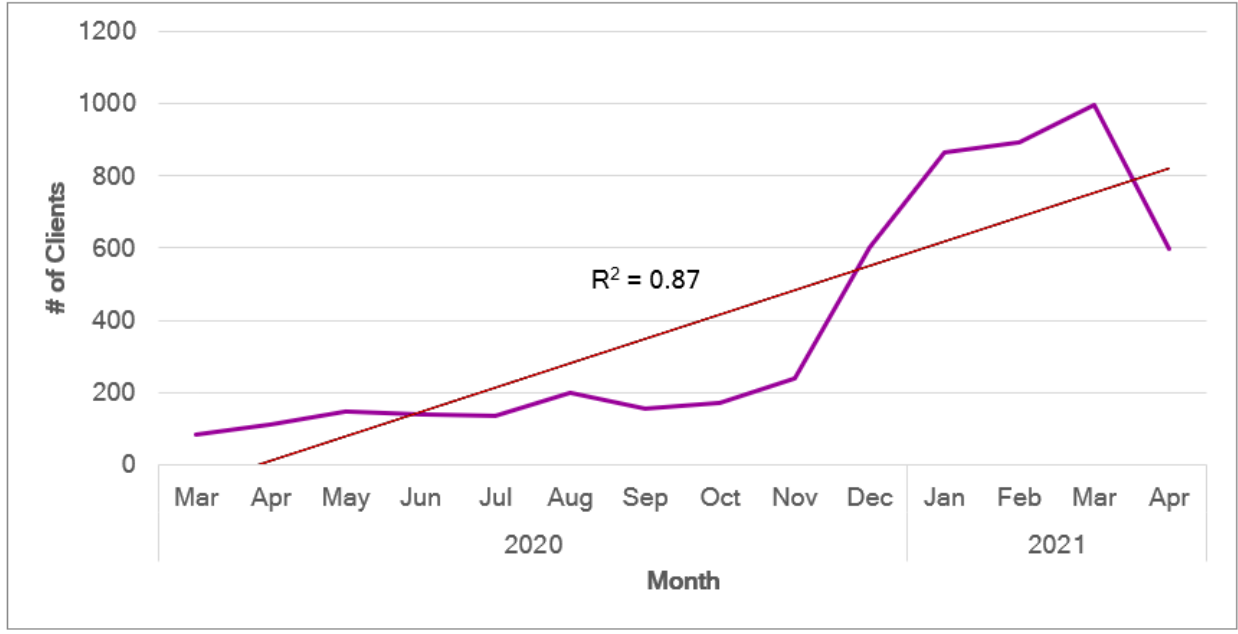
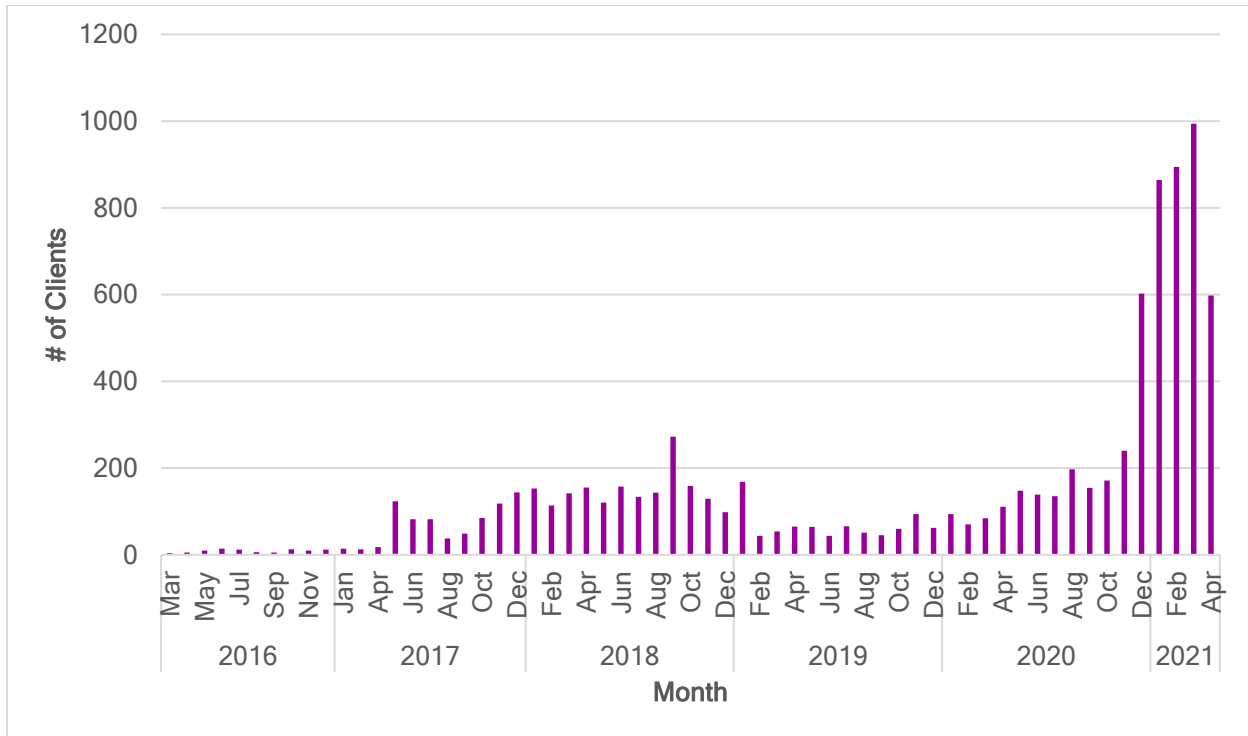Figure B2. Line graph of the number of clients enrolled in the PP monthly from March 2020 when the COVID-19 pandemic began to April 22, 2021. The April count is lower as incomplete.
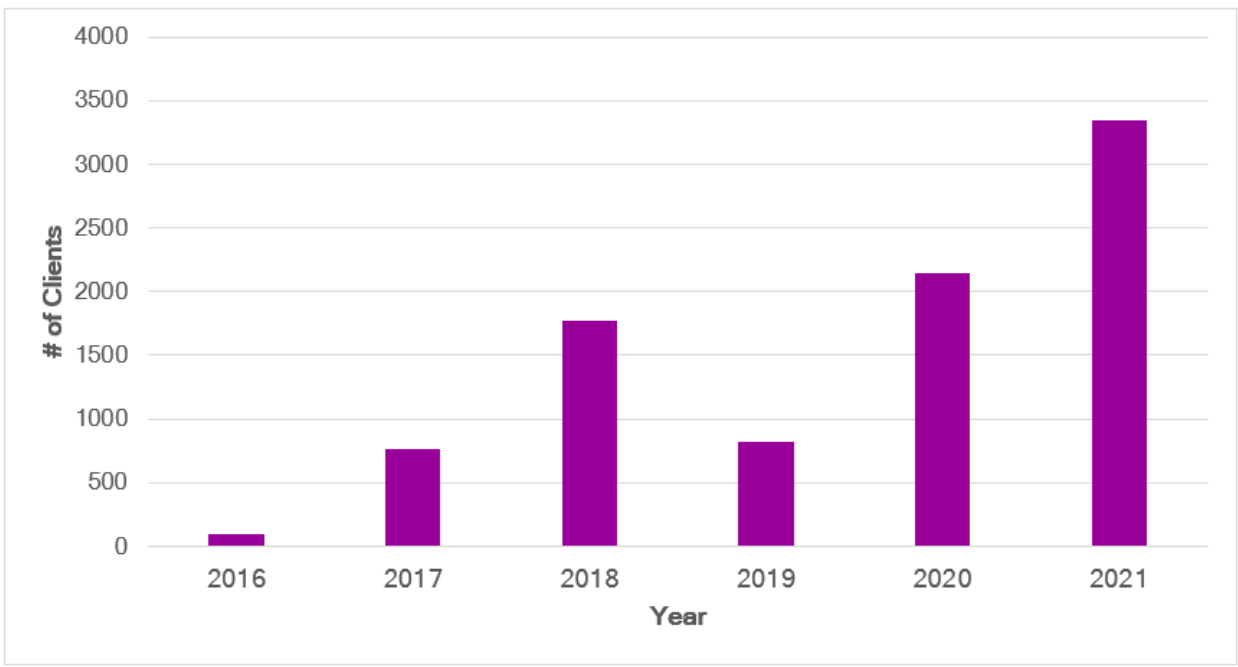
Figure B3. Number of clients enrolled in the PP per year.

Figure B4. Number of clients enrolled in the PP monthly from March 18, 2016 when the PP was launched to April 22, 2021.

Appendix C

Clients' Responses to JotForm Intake Questions
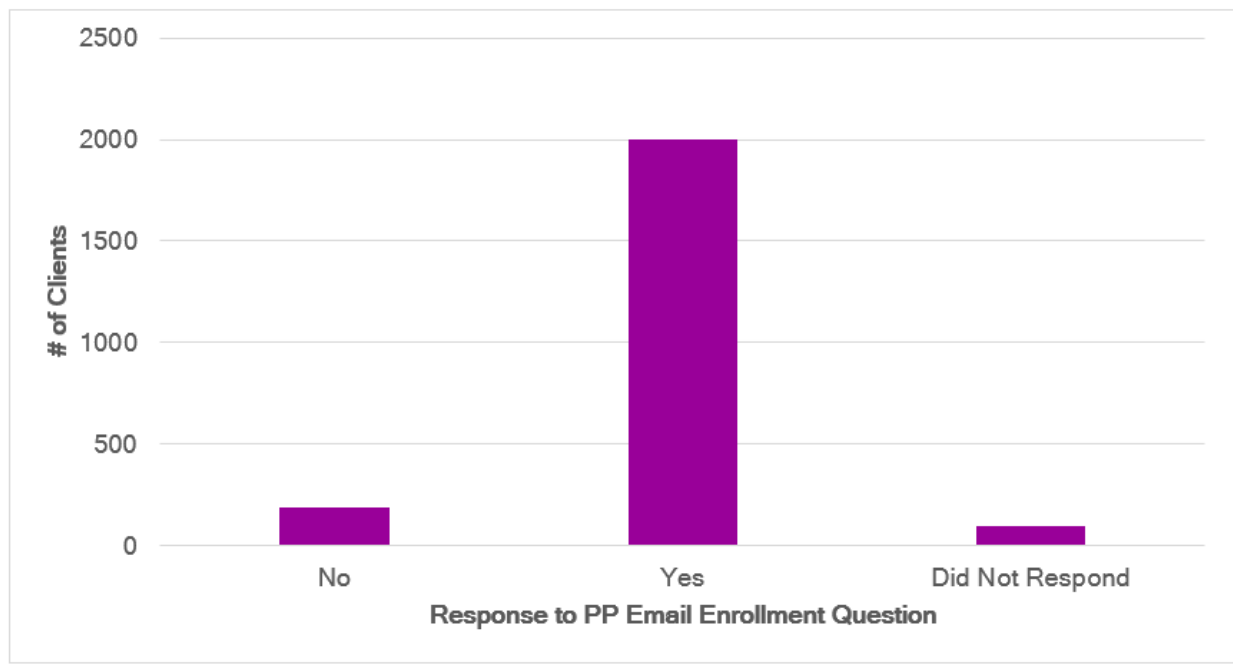
Figure C1. Count of clients' response to the intake form question "[This organization] has a

Patient Portal that gives you the ability to see appointments, request changes, view statements,

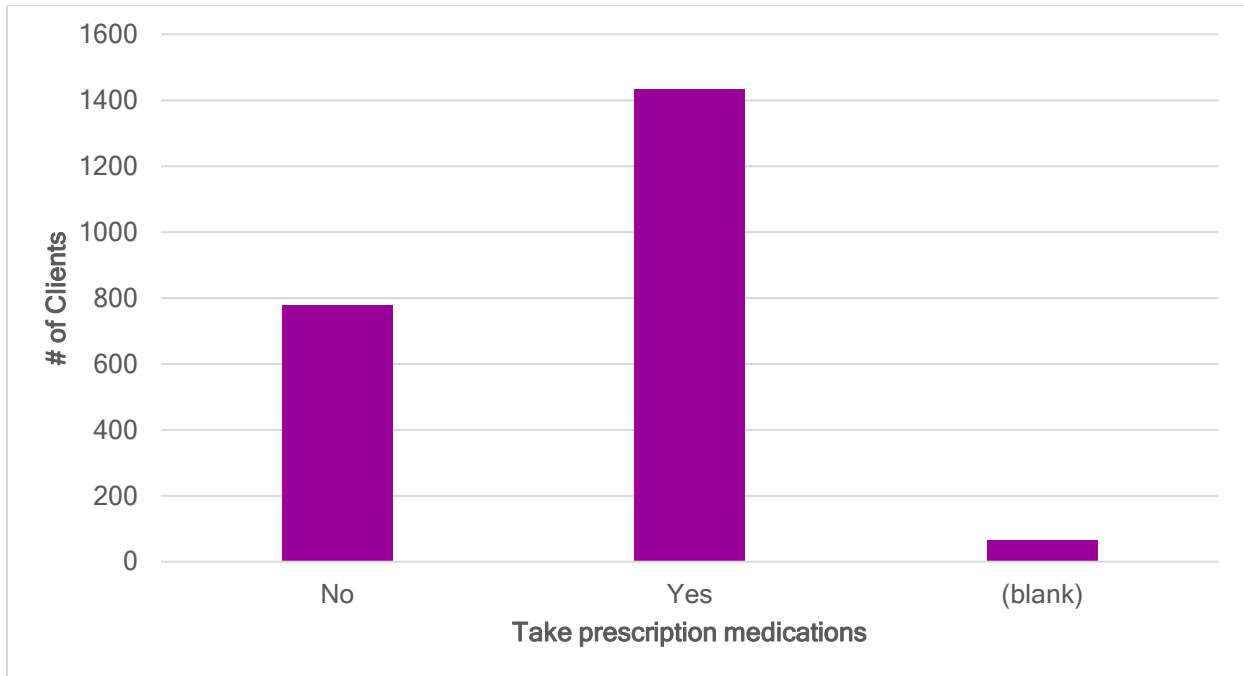and access medical information. Would you like us to email you information to get signed up?"

Figure C2. Count of clients' response to the intake form question "Are you taking any

prescription medications?"

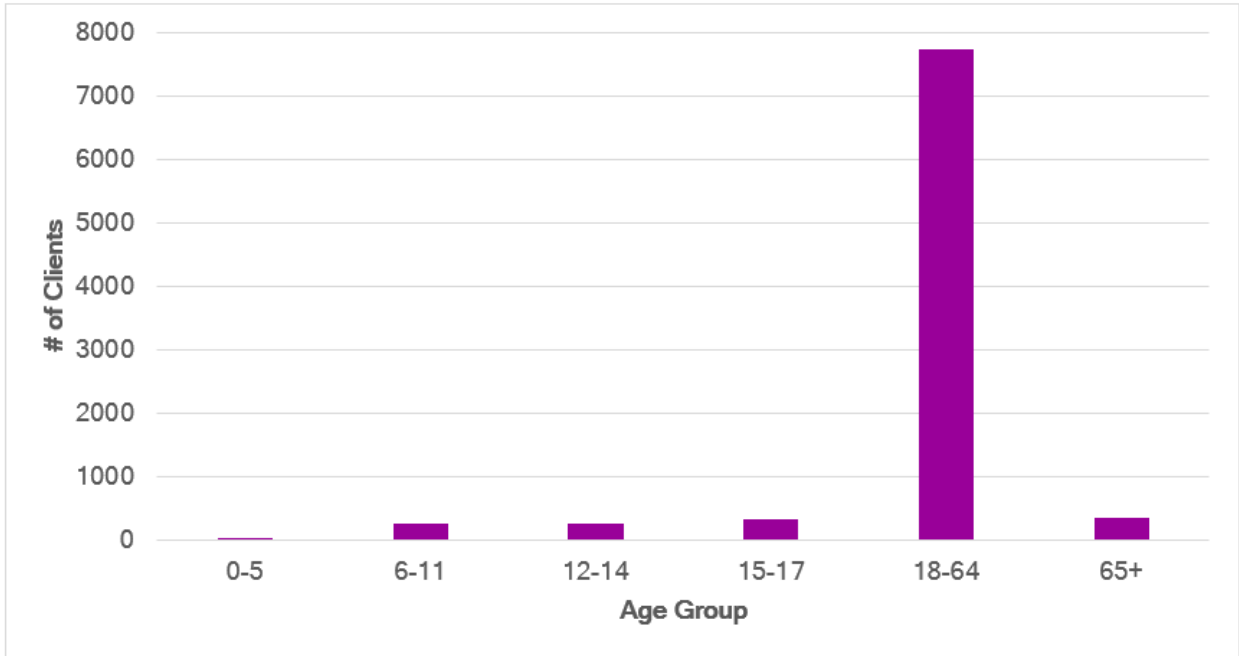**Appendix D**

Demographics of Clients Enrolled in the PP

Figure D1. Number of clients enrolled in PP per age group. Age groups were defined by the organization's categorization of ranges of clients served by providers.
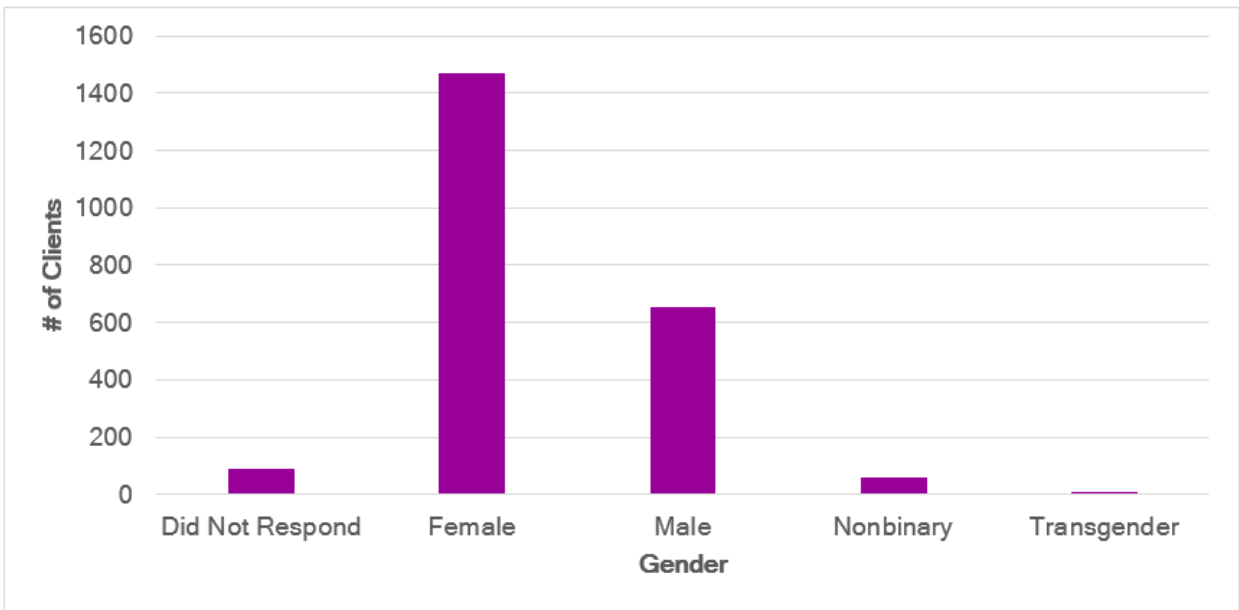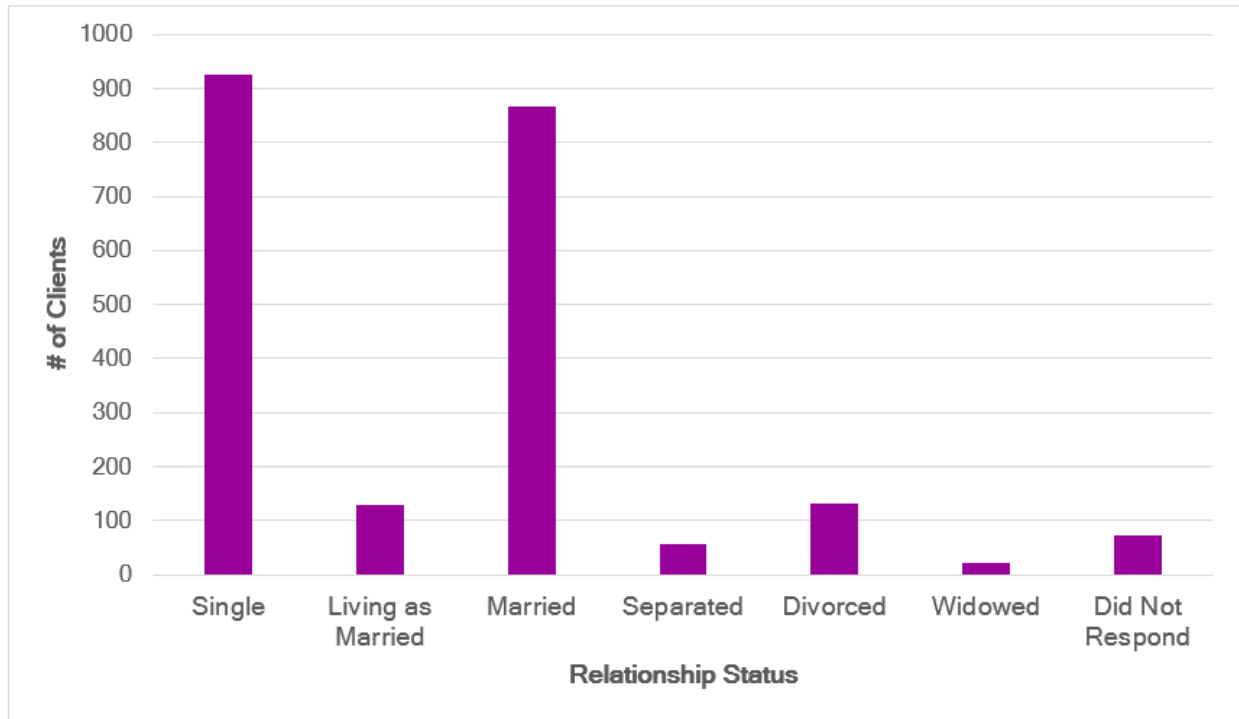

Figure D2. Count of gender reported by clients.

Figure D3. Count of clients' relationship status.