REDUCING POLYDRUG USE AMONG METHADONE ASSISTED THERAPY PATIENTS: AN EXAMINATION OF THE MOTIVATIONAL INTERVIEWING STRATEGY

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ABSTRACT

Polydrug use continues to rise across the world with more victims suffering from substance use disorders (SUD). Methadone Assisted Therapy (MAT) has shown significant results in reducing morbidity, increased treatment retention and reduced use of illicit psychoactive substances. This study founded on the self-determination theory, sought to find out the effectiveness of Motivational Interviewing (MI) on Polydrug Use (PDU) reduction among Methadone Assisted Therapy (MAT) patients. Using a mixed methods approach with a quasi-experimental research design, with pre and post strategy in experimental group site A and control group site B, both treatment and control group received baseline and endline assessment, as well as MAT treatment. The experimental group received MI with instant assessment and feedback to reduce polydrug use through self-rating readiness ruler, while the control group received Zero MI treatment. The population of the study comprised 2121 patients from which, a sample of 120 respondents was obtained through random sampling technique where 60 respondents were assigned to the treatment group and the other 60 to the control group. Base line assessment was done for 5 to 10 minutes using: TimeLine Fallback for polydrug use, WHO (Five) well-Being for MAT patient's wellbeing, self-rating readiness ruler for readiness to reduced polydrug use. Motivation Interviewing took 15 to 25 minutes, 10 participants per group in the treatments group of 6 sessions for one and half months. Data analysis was done both descriptively and with inferential inform of regression and correlations analysis. At three months follow up, effectiveness of MI in the treatment group is evidenced by MAT patients' significant reduction in polydrug use, improved wellbeing, increased adherence, reduced MAT dosage, increased MAT patients on cessation of MAT dosage, as well as reduced patient dropping out MA. Reduction of polydrug use by MAT patients require case management approach, methadone assisted therapy cannot reduce polydrug use, however, MAT clinicians need to combine motivation interview together with Methadone assisted therapy to reduce polydrug.

Key words: Motivational Interviewing, Methadone Assisted Therapy, self-rating readiness, polydrug use, self-determination

I.   INTRODUCTION

Polydrug use is the concurrent use of more than one psychoactive substance for a non-medical purpose (United Nations Office on Drugs and Crime [UNODC], (2018b). Despite the strong evidence in application of MAT for reducing opioids use, polydrug use exists among MAT patients and interferes with MAT treatment outcome (Wagner et al., 2018). Methadone assisted Therapy (MAT) is a

pharmacological intervention strategy that treats OUD Substance Abuse Mental Health Services Administration (SAMHSA, 2018 & NIDA, 2019a).

According to a report presented by Centre for Disease Control (CDC, 2020b), some patients remain in MAT longer than the 1 year, recommended period by SAMHSA (2020a) due to the commodity of mental and psychosocial conditions and lack of individual motivation (CDC, 2020b). To this end, through MI the patients' medical, psychiatry, psychological needs and social services are incorporated in the patients' management (NIDA, 2019b). The process of MI intervention includes: engaging, focusing, evoking and planning (Miller & Rose, 2015) and is supported by self-rating scale readiness ruler (NHS Health Scotland, 2015 & Levounis et al., 2017). When a client has not made the decision to reduce polydrug use, evocation is unnecessary (Levounis et al., 2017). Therefore, this study was conducted in a Kenyan context with an aim to shed light based on scientific statistical data and evaluate if MI is effective on polydrug use reduction among MAT patients in Mathari and Ngara MAT clinics in Kenya, Nairobi County.

II.   LITERATURE REVIEW

A. *Self-Determination theory (SDT)*

The Self-Determination theory (SDT) by Ryan and Deci (1985) informed this study's psychological and cognitive experiences of polydrug use in MAT patients, the MI process among the MAT patients and what informs their decision to reduce polydrug use. The study, through MI, emphasized on psychological and cognitive factors that foster or undermine the MAT patient's competency, relatedness and autonomy, leading to polydrug use or non-use (Ackerman, 2021). The major proponents of SDT theory are to optimize intrinsic motivation development for self-regulation. The SDT is rooted in the humanistic psychology approach by Rogers (1959) and posits that MAT polydrug users are trustworthy, understand themselves and are capable of resolving their problems. Intrinsic motivation is the inherent human tendency to seek out novelty and challenges, active personal commitment leading to change from pre-contemplation, contemplation, preparation, action and maintenance (Prochaska, 2008).

B. *Effectiveness of Motivational Interviewing on Polydrug Use Reduction*

Methadone Assisted therapy for opioid use disorder is evidence-based and is a life-saving intervention. However, studies show that 66% of MAT patients continue to use illicit opioids despite being in the MAT treatment program (Shams et al., 2019). It has widely been reported that MAT patients show differences

in treatment outcomes for mode of intake for opioids' users such as those who inject drugs and those who smoke (Morgan et al., 2019; Massah & Moradi, 2018).

Motivational interviewing is one of the most effective techniques for addiction recovery (SAMHSA, 2020b). It is a technique that is used to help MAT patients change their destructive behavior of polydrug use (Levounis et al., 2017). It requires the commitment to reduce polydrug use through engaging, focusing, evoking and planning (SAMHSA, 2020). It calls for the patients past successful strategies and their history of recovery (SAMHSA, 2020a). According to the treatment protocol by (SAMHSA, 2020a) and (NIDA, 2020b) the length of methadone treatment should be a minimum of 12 months, though, it may take 24-36 months, or many years. To evaluate the effectiveness of MI on reducing cannabis polydrug use, Papinczak et al. (2020) conducted a study on addictive effectiveness and feasibility of the theory driven instant assessment and feedback system in brief cannabis intervention in Australia. Results indicated that those assigned to MI increased motivation to change cannabis polydrug use than those in treatment, as usual from pre- and post-results. Motivational interviewing is effective in reducing unhealthy alcohol use among primary health care workers with HIV (Satre et al., 2019; D'Amico et al., 2018) and reduction in craving and dependency (Mojahed & Navidian, 2018). The MI therapist engages polydrug users in the MAT care plan to talk about their polydrug use, concerns, hopes and establishing trusting relations (Levounis et al., 2017).

Recently, Murphy et al. (2019) conducted a study to evaluate the effectiveness of brief alcohol intervention supplemented with substance free activity sessions or relaxation training. Results from generalized linear mix model, indicated reduction in polydrug use of alcohol and polydrug problems where MI was used in a group (Murphy et al., 2019). The study by Clair-Michaud et al. (2016) found MI effective in reducing polydrug use. Motivation Interviewing with standardized simulation has a promising effect on patients' knowledge and confidence in MI techniques to manage OUD among older adults (Chang et al., 2019). Motivational Interviewing decreases the desire to use, and probability of use among female drug users (Oveisi et al., 2020). Mojahed and Navidian (2018) found MI to be effective in reducing polydrug use, craving and dependency on hookah for pregnant women in Iran. A study by Mitcheson et al. (2006) found it feasible to include adjunctive MI to reduce crack cocaine use in patients undergoing MAT in UK. The results showed that those in MI had a large and statistically significant reduction in heroin use after a single session of MI (Mitcheson et al., 2006). During MI intervention, patients struggle with lack of motivation (Levounis et al., 2017). Case management and MI intervention has a positive

impact on reducing polydrug use (Witbrodt et al., 2019). Motivational Interviewing and Cognitive behavior treatment (CBT) yields reduction in polydrug use (Chermack et al., 2019).

In Kenya, a study on a randomized clinical trial on intervention for alcohol use problems, found mobile-based MI intervention effective in reducing alcohol use problems among adults visiting primary care (Harder et al., 2020). Results show no difference between MI in person and mobile MI after 1 month follow up, signaling a mind shift on MI in person as a superior strategy compared to mobile based technology.

III. METHODOLOGY

The study adopted a quasi-experimental research design in a control group and experimental group. The study also made use of a mixed methods approach which entailed collection of both quantitative and qualitative data (Nardi, 2018). While quantitative data addressed the adoption of MI in reducing polydrug use among MAT patients through an instant MI assessment, MI self-rating readiness ruler and feedback, and self-report, the qualitative data presented data from the interviews addressing the views of MAT patients on their thoughts about cutting down on polydrug use, with the help of MI.

The quasi-experimental research design entailed a pre and posttest strategy in which the dependent research variable was measured once before MI treatment and after implementing the MI treatment, with the two groups being in different sites to avoid a herding effect. Both the treatment and control group study participants received their MAT daily dosage in their MAT clinics. A baseline assessment for both the treatment and control group and MI in the treatment group over a period of six (6) weeks was carried out. The study was conducted in select MAT clinics in Nairobi County represented in this paper as MAT clinic A and B. The choice of Nairobi County was because the county has a highly cosmopolitan population, with increasing prevalence of drug abuse and opioids use (Rhodes & Rhodes, 2018). The population targeted by this study included patients with opioids addiction who were at the time of research, under MAT treatment in the selected MAT clinics yet subject to Polydrug use. The target population was 2121 patients, 1207 and 914 MAT patients from MAT clinic A and MAT clinic B respectively (Study sites clinical records, 2020). The criteria for selection comprised patients in secondary MAT patients' clinical records for demographic, polydrug use history, medical and family, as well as personal polydrug use history. A psychometric tool for quantitative data and MI in a representative sample from the MAT population was administered. The MAT patients' 'significant others' as well as MAT service providers and key informants from the population were included in the study.

A target sample of 120 participants was further drawn from the total population of 2121 MAT patients through systematic sampling and assigned into 2 groups (treatment and control groups). This was guided by Tara's (1967) formula = N/ (1 + N(e)2) (Louangrath, 2017; Imperial Writers, 2016).

Where:

n	: signifies the sample size
N	: signifies the population under study
e	: represents the margin error of 0.05 confidence level
n	: 2121/ (1 + 2121(0.05)2
n	: 2121/ (1 + 5.3025)
n	: 2121/ (6.3025)
n	: 336

A desired sample size of 336 MAT patients, was obtained from both study sites A and B. Through the systematic random sampling at an interval of eight patients, the respondents were selected from the desired sample size of 336 to obtain the study sample size n = 120 at 95% confidence interval.

Baseline and end line assessment for both groups were conducted through TLFB, WHO-5 well-being questionnaire and secondary MAT clinical record assessment. The treatment group at MAT clinic A went through MI with instant assessment and feedback and MI self-rating readiness ruler, while the control group received zero MI and Zero MI self-rating. The base line assessment, secondary MAT patients' clinical record assessment, MI and MI rating self-rating was conducted within six (6) weeks and end line assessment after three (3) months. The sample size included two major categories of MAT patients, those in less than 60mg methadone dose titration phase to reduce withdrawals and those in methadone phase of above 60 mg. The participants included MAT patients suffering from OUD and who are in MAT clinics with minimum age of 18 and above years, those who tested positive for illicit opioids use for non-medical use during MAT entry, those with positive polydrug use for at least 3 months prior to the study, those with an expected length of stay for 4 months from the start date of the study and those who test active for polydrug use during pre-test baseline assessment. The study further employed the use of survey questionnaires and interview schedules for data collection using various statistical tools as illustrated in Table 1(Source: Researcher, 2021).
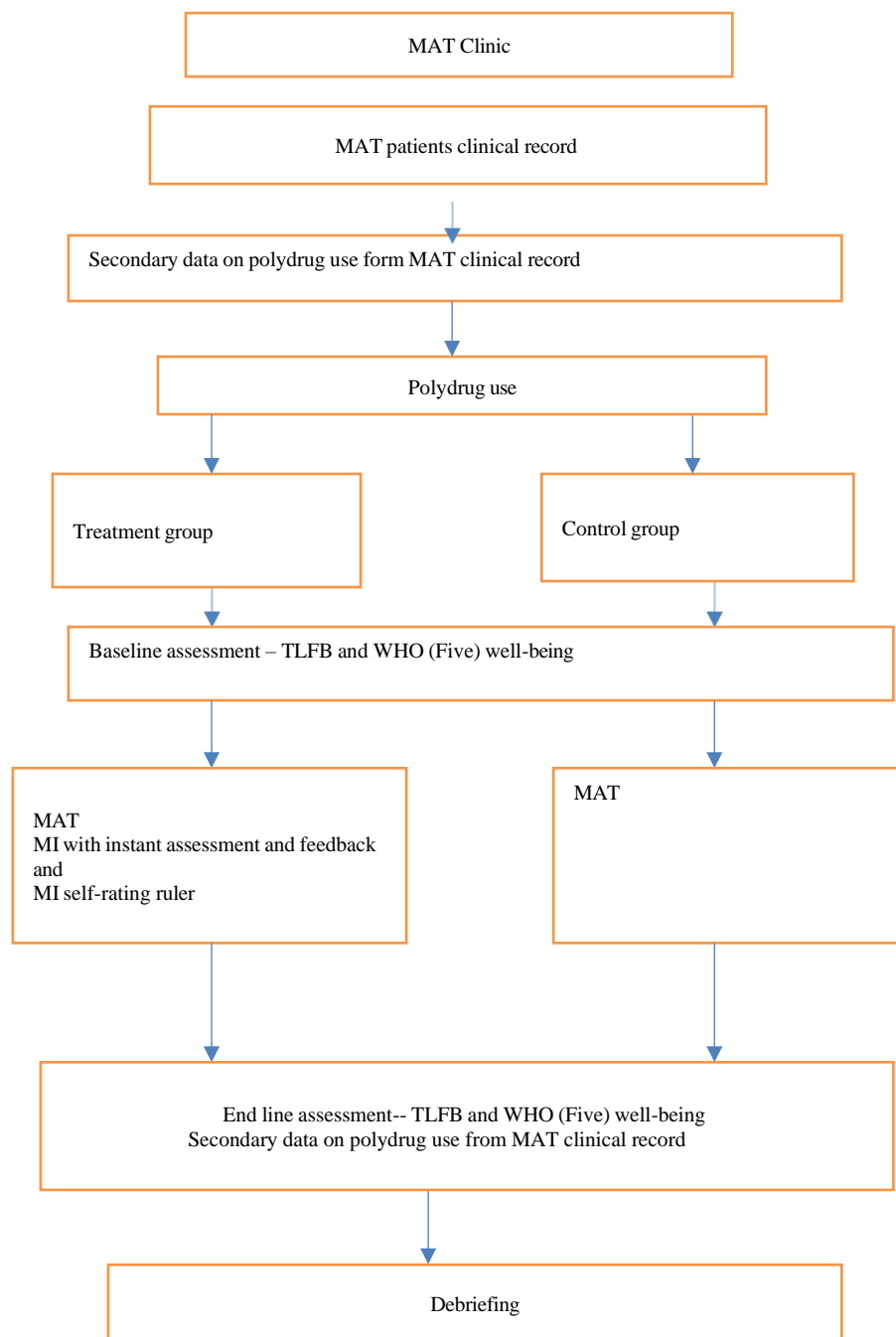
TABLE 1:

Study Data Collection Methods

Intervention phases	Source of the data	Group	Data collection method	Timelines in 3 months	Type of the data
Phase 1	MAT Clinic	Control group and Treatment group	**Base line assessment** of the from MAT patients clinical record	Within Six (6) weeks	**Secondary data** • Biodemographic information • History polydrug use • Medical and psychiatry • Family and social, personal history • MAT history
Phase 2	MAT patients	Control group and Treatment group	**Base line assessment** • TLFB • WHO (Five) well-being index	Within six (6) weeks	• Prevalence of polydrug Prevalence Types Quantity Frequency • Psychological state
Phase 3	MAT patients	Treatment group	• MI with instant assessment and feedback • MI self-rating readiness ruler.	Within six (6) weeks During evoking phase	• Self-efficacy and self-determination to reduce polydrug use • Importance and confidence
Phase 4	MAT Patients	Control group and Treatment group	**End line assessment** • TLFB • WHO (Five) well-being index • MAT patients clinical record	At three (3) months	• Prevalence of polydrug use • Psychological state • History of polydrug use after MI intervention

A summary of the data collection procedure is as shown in figure 1 (Source: Researcher, 2021).

Figure 1

Data Collection Procedures

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│                MAT Clinic                     │
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┌─────────────────────────────────────────────┐
│          MAT patients clinical record         │
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                      ▼
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│ Secondary data on polydrug use form MAT       │
│ clinical record                               │
└─────────────────────────────────────────────┘
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┌─────────────────────────────────────────────┐
│                Polydrug use                   │
└─────────────────────────────────────────────┘
          │                       │
          ▼                       ▼
┌──────────────────┐    ┌──────────────────┐
│  Treatment group  │    │   Control group   │
└──────────────────┘    └──────────────────┘
          │                       │
          ▼                       ▼
┌─────────────────────────────────────────────┐
│ Baseline assessment – TLFB and WHO (Five)     │
│ well-being                                    │
└─────────────────────────────────────────────┘
          │                       │
          ▼                       ▼
┌──────────────────┐    ┌──────────────────┐
│ MAT               │    │ MAT               │
│ MI with instant   │    │                   │
│ assessment and    │    │                   │
│ feedback and      │    │                   │
│ MI self-rating    │    │                   │
│ ruler             │    │                   │
└──────────────────┘    └──────────────────┘
          │                       │
          ▼                       ▼
┌─────────────────────────────────────────────┐
│ End line assessment-- TLFB and WHO (Five)     │
│ well-being                                    │
│ Secondary data on polydrug use from MAT       │
│ clinical record                               │
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│                 Debriefing                    │
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IV.   RESULTS

The WHO (Five) well-being index is used to assess the current well-being of the patients in MAT during baseline and end line assessment. The results shown in Figure 2 (Source: Researcher, 2021), reveal that there is a change in the well-being of the MAT patients in the treatment group after administering motivation interview. During baseline assessment 100% (n = 60) of the participants in the treatment group indicated poor well-being of less than 13 on the five-statement scale. During end line assessment 7, participants indicated a well-being of more than 13 showing an improvement in the well-being of the MAT patients in treatment group by 13%.

Figure 2:

Treatment Group Well-Being
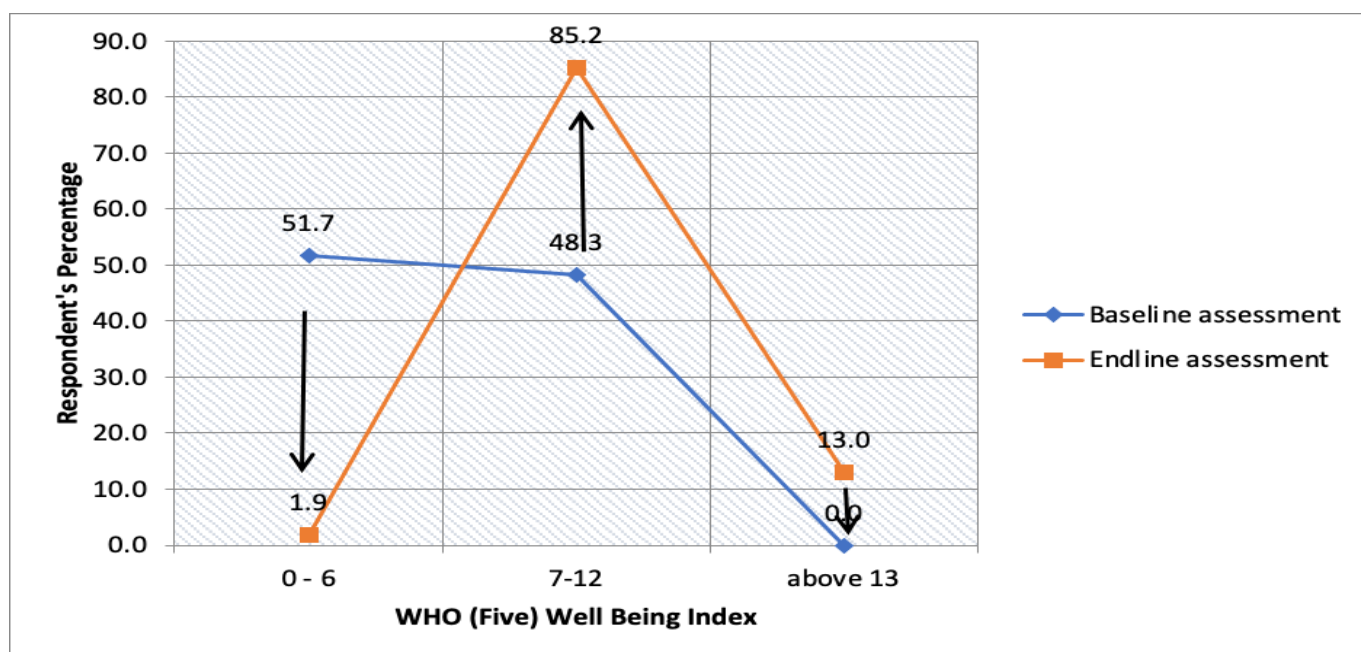
During baseline assessment 51.7% (n = 31) of the respondents from the treatment group stated a well-being of between 0 and 24% and 48.3% (n = 29) stated a well-being of between 28% and 48%. During end line assessment 1.9% (n = 1) of the respondents stated a well-being of between 0 and 24%, 85.2% (n = 46) stated a well-being of between 28% and 48% and only 13% (n = 7) stated a well-being of above 52%. On average, the WHO-5 well-being index score for treatment group was 25.52 for baseline assessment, Cl 95% (23.77, 27.27) and 41.85 for end line assessment, Cl 95% (39.71, 43.98). This shows that the average score was <50 (less than 50).

Although as shown in the Figure 3 (Source: Researcher, 2021), there is a change in the well-being of MAT patients in control group, all the patients from this group indicated a poor well-being of less than 13 on the five-statement scale. This indicates no improvement of the well-being of the patients from the control group.

Figure 3:

Control Group Well Being
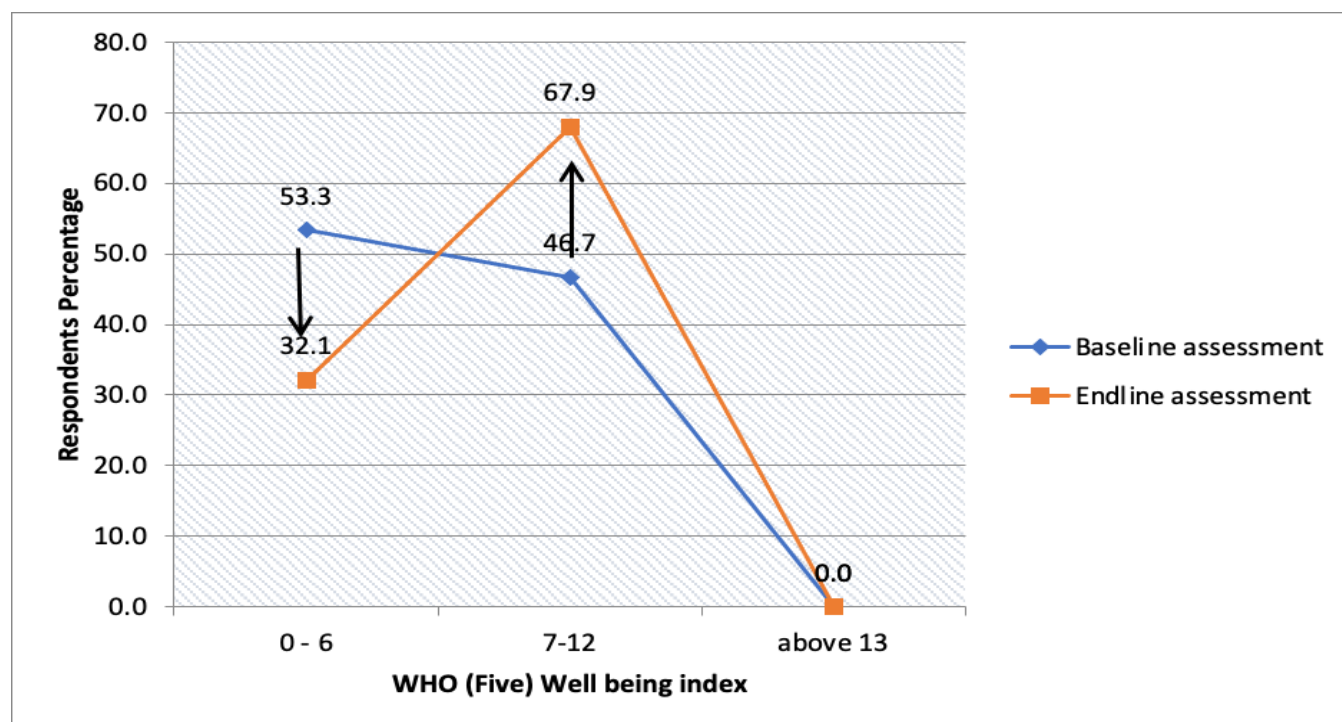
During baseline assessment 53.3% (n = 32) of the respondents from the control group stated a well-being of between 0 and 24% and 46.7% (n = 28) stated a well-being of between 28% and 48%. During end line assessment 32.1% (n = 17) of the respondents stated a well-being of between 0 and 24% and 67.9% (n = 36) stated a well-being of between 28% and 48%. On average, the WHO-5 well-being index score for control group was 25.07 for baseline assessment, 95% Cl (22.43, 27.70) and 29.81 for end line assessment, 95% Cl (27.37, 32.25). This shows that the score was <50 (less than 50). The results are shown in Figure 4 (Source: Researcher, 2021).

Figure 4

Control and Treatment Group Well-Being After MI
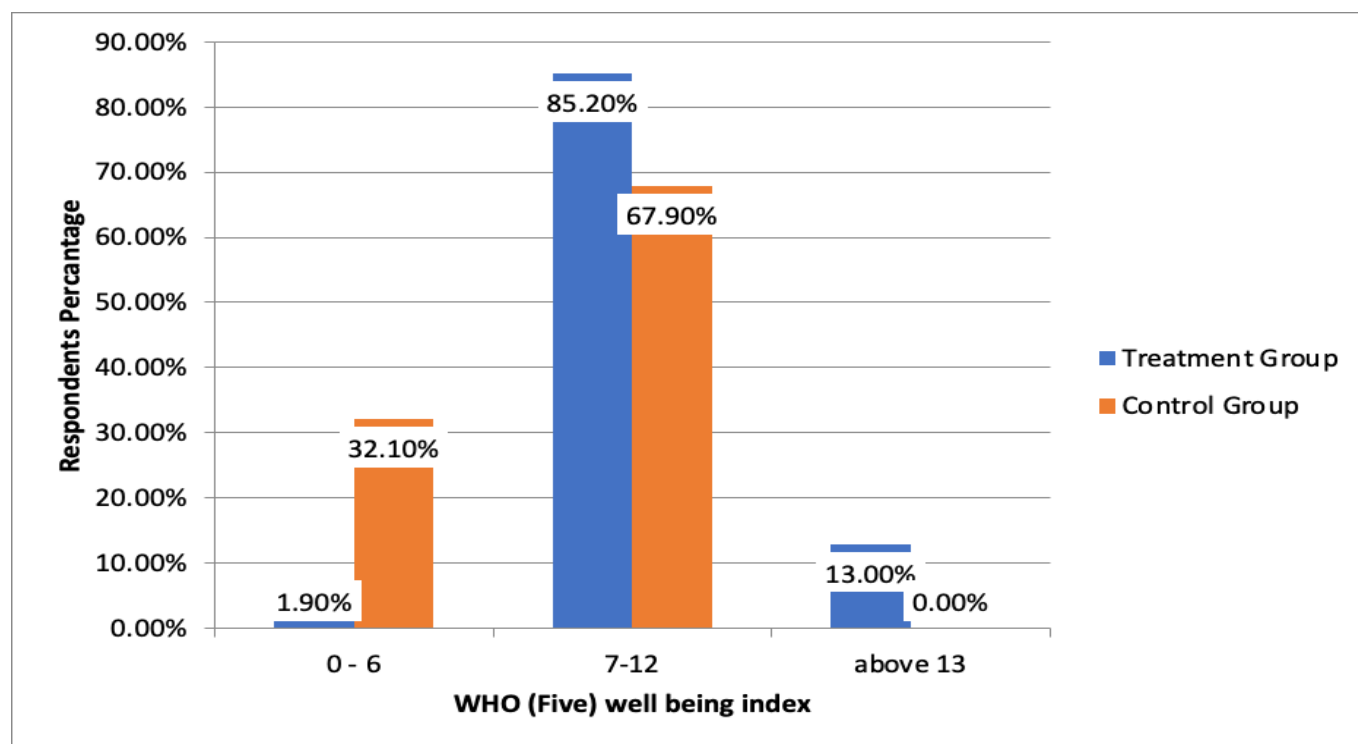
Comparing the well-being of the MAT patients from both the treatment and control group after end line assessment, revealed that on average, the well-being of the Patients in treatment groups was high as compared to that of the patients in control group during both baseline (25.52 vs. 25.07) and end line assessment (41.85 vs. 29.81). After Administering the MI to the treatment group, their well-being improved greatly from 25.52 to 41.85, while that of control group who did not receive MI improved from 25.07 to 29.81.

1. *Self- Determination*

During Baseline assessment, the treatment group reported 58.33% (n = 35) MAT patients who missed MAT dosage compared to 65.00% (n = 39) MAT patients from the control Group who missed MAT dosage at times due to poly drug use. The results are shown in Figure 5 (Source: Researcher, 2021).

Figure 5:

*Whether MAT Patients Missed MAT Dosage at Times Due to Polydrug Use Before MI*
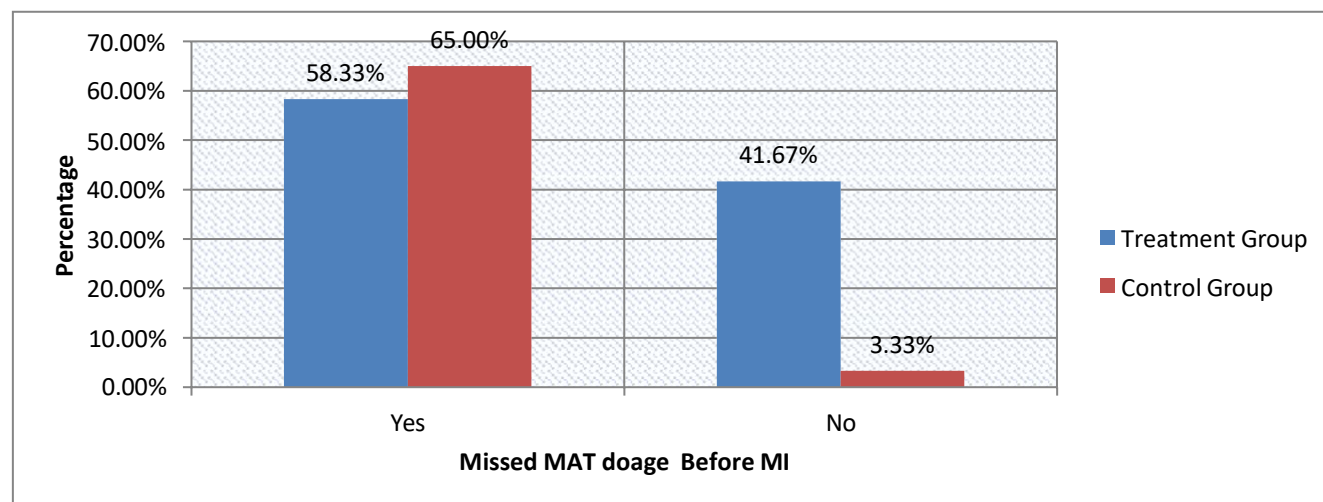
During end line survey, the treatment Group reported 20.00% (n = 12) MAT patients who missed MAT dosage compared to 76.67% (n = 46) MAT patients from the control group who missed MAT dosage at times due to polydrug use. The results findings are shown in Figure 6 (Source: Researcher, 2021).

Figure 6:

Whether MAT Patients Missed MAT Dosage at Times Due to Poly Drug Use After MI
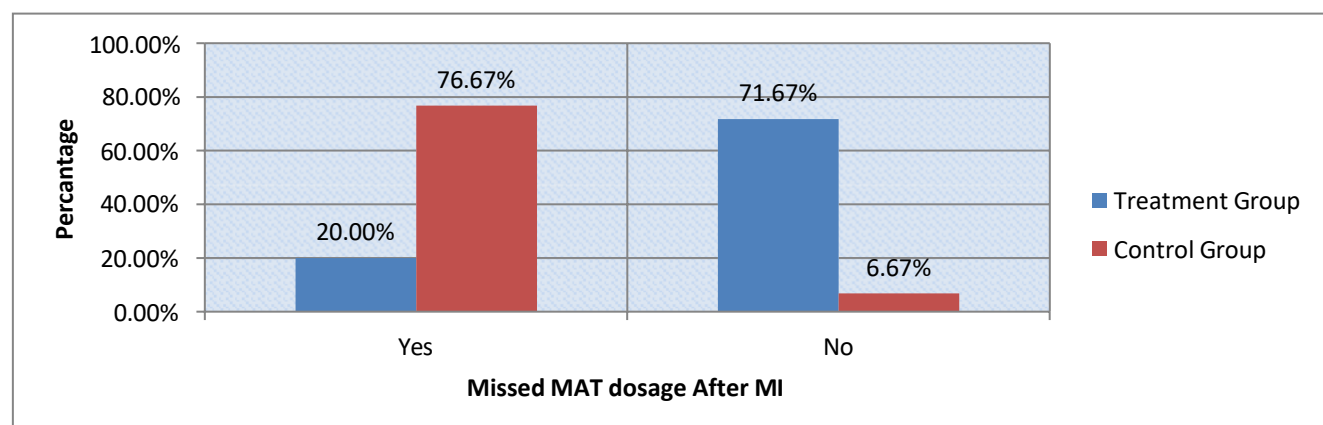
Comparing the findings on whether the MAT patients missed MAT dosage at times due to polydrug use, reveal a significant decrease in the number of MAT patients from the treatment group that missed MAT dosage by 38.33% after being administered with MI (35 vs. 12) and an increase in the number of MAT patients from the control group that missed MAT dosage by 11.67% (39 vs. 46).

During Baseline assessment, the treatment group reported 58.30% (n = 35) MAT patients who dropped out of MAT compared to 18.33% (n = 11) MAT patients from the control Group who dropped out of MAT. The results findings are shown in Figure 7 (Source: Researcher, 2021).
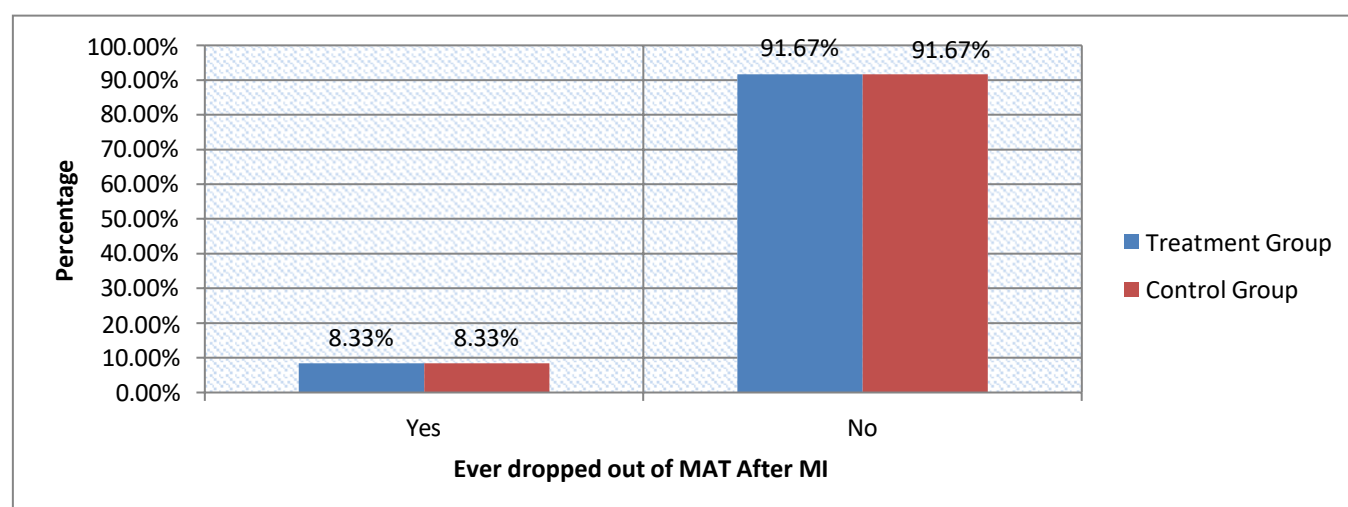
Figure 7:

Ever Dropped Out of MAT Before MI
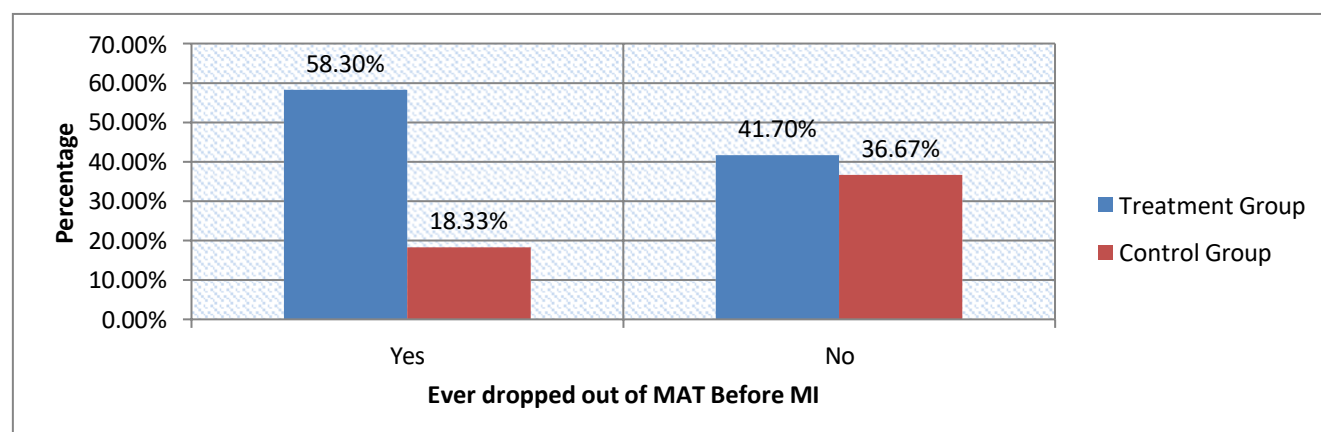
During End line assessment, both treatment and control groups reported 8.33% each (n = 5) of MAT patients who dropped out of MAT after motivational interviewing as shown in Figure 8 (Source: Researcher, 2021).

Figure 8:

Ever Dropped out of MAT after MI

Comparing the findings on whether the MAT patients had ever dropped out of MAT, there was a significant decrease in MAT patients from the treatment group that dropped out of MAT, that decreased by 49.97% after being administered with MI (35 vs. 5) and also a decrease in the number of MAT patients from the control group that dropped out of MAT by 18% (11 vs. 5). While 5 of the study participants dropped out of MAT, 1 of the respondents was re-inducted after defaulting from the MAT program. The study further investigated on the prognosis of MAT patients being in the MAT treatment during the study period, at least four months based on their history in the MAT clinical records. The results analysis showed that the majority of the respondents, 80%, showed good prognosis during the period of the study, while 15% showed bad prognosis during the period of the study. The result analysis is shown in Figure 9.

Figure 9:

Prognosis of MAT Patient Being in the MAT Treatment During the Study Period at Least Four Months Based on the History in the MAT Clinical Record
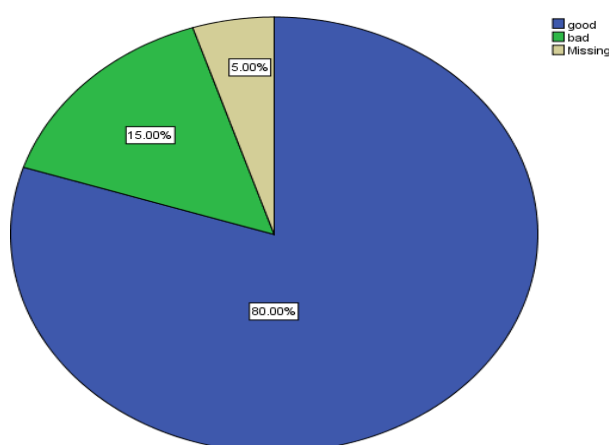
2. Engaging and Focusing MI Stage

Table 2 below represents the findings of the first stage during motivation interviewing of MAT patients from the Treatment Group.

**Table 2:**

Engaging and Focusing MI stage

	Percentage (p)	Frequency (n)
Do you think your poly drug affect your MAT?	100.00%	60
Are there times you miss MAT dosage because of poly drug use?	91.70%	55
Frequency		
Once in a week	48.30%	28
Once in two weeks	10.30%	6
Once in three weeks	15.50%	9
Once in a month	25.90%	15
Have you ever attempted to stop polydrug use since you enrolled in MAT	91.70%	55
How long did you abstain from poly drug use?		
Less than 1 month	22.20%	12
1 to 3 months	38.90%	21
4 to 6 months	5.60%	3
7 to 9 months	5.60%	3
10 to 12 months	14.80%	8
More than 1 year	13.00%	7

3. Evoking MI Stage

Findings from the MI assessment and feedback revealed that 100% (n = 60) admitted to being ready for the new chapter of poly drug use reduction. The respondents were also given the self-rating readiness ruler to indicate how important and confident they were about reducing poly drug use. The results revealed that 83.33% (n = 49) were very important (8-10) on making the change while 16.67% (n = 10) indicated that they are somewhat important (4-7). The results are shown in Figure 10.

Figure 10:

*How Important is it for you About Making this Change?*
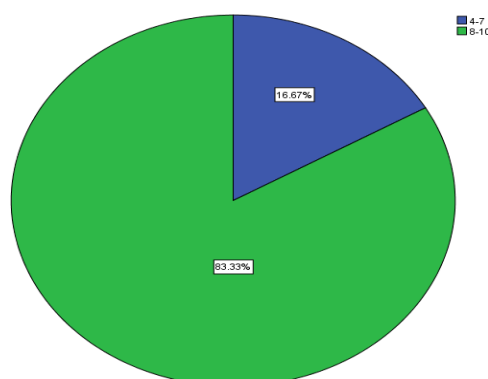
4. Confidence About Reducing Polydrug Use

Findings on confidence on reducing polydrug use revealed that 66.67% (n = 39) of the respondents were very confident on making the change while 33.33% (n = 18) indicated they were somewhat confident in making the change. The results are shown in Figure 11.

Figure 11:

How Confident are you about Making this Change?
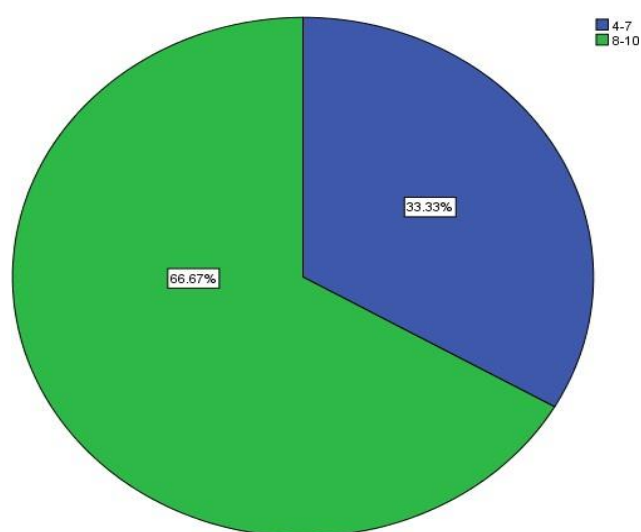
A Pearson correlation test was done to investigate if there is a significant relationship between self-rating readiness ruler and polydrug use reduction. The results presented in Table 3 show that there is no significant relationship between self-rating readiness ruler and polydrug use reduction.

Table 3.

Correlation Between Self-Rating Readiness Ruler and Polydrug Use Reduction

|		polydrug use reduction
How important is it for you about making this change?	Pearson Correlation	0.000
	Sig. (2-tailed)	1.000
	N	46
How confident are you about making this change?	Pearson Correlation	-.129
	Sig. (2-tailed)	.398
	N	45

The 7 MAT patients from the treatment group who were found to be on cessation of MAT during endline assessment had all indicated on the self-rating readiness ruler they were between 6 and 10. 5 of them indicated they were very important in making the change (10) only one indicated they were somewhat important in making the change (7). On how confident the MAT patients were on making the change, 2 indicated 6 and 2 indicated 7 showing they were somewhat confident in making the change. Only 2 indicated 10 on the self-rating readiness ruler revealing they were very confident in making the change. This reveals that they were all either somewhat confident/important, or very important/confident about polydrug use reduction.

5. MAT Dosage

During Baseline assessment, the treatment group reported 41.7% (n = 25) MAT patients whose MAT dosage was below 60mg compared to 53.3% (n = 32) MAT patients from the control Group whose MAT dosage was above 60mg. The results findings are shown in Figure 12.
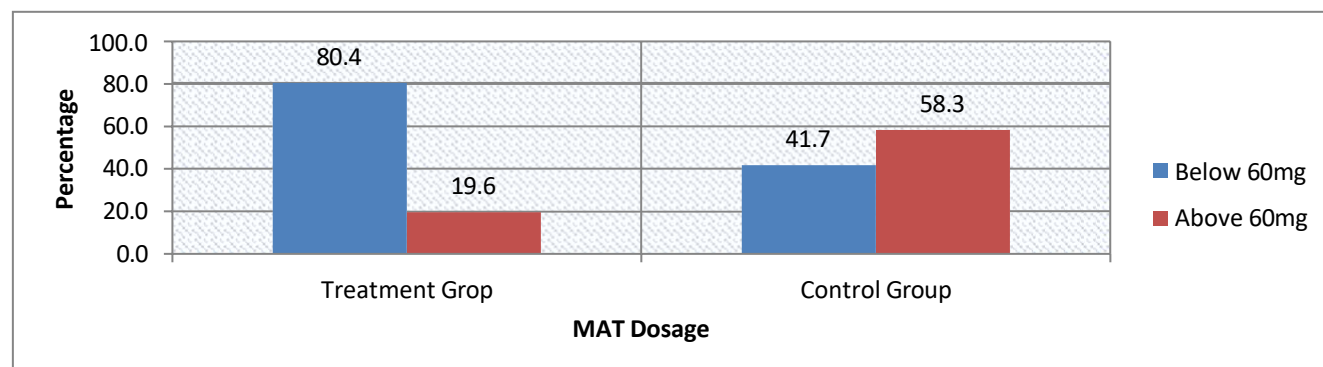
Figure 12:

MAT Dosage before MI
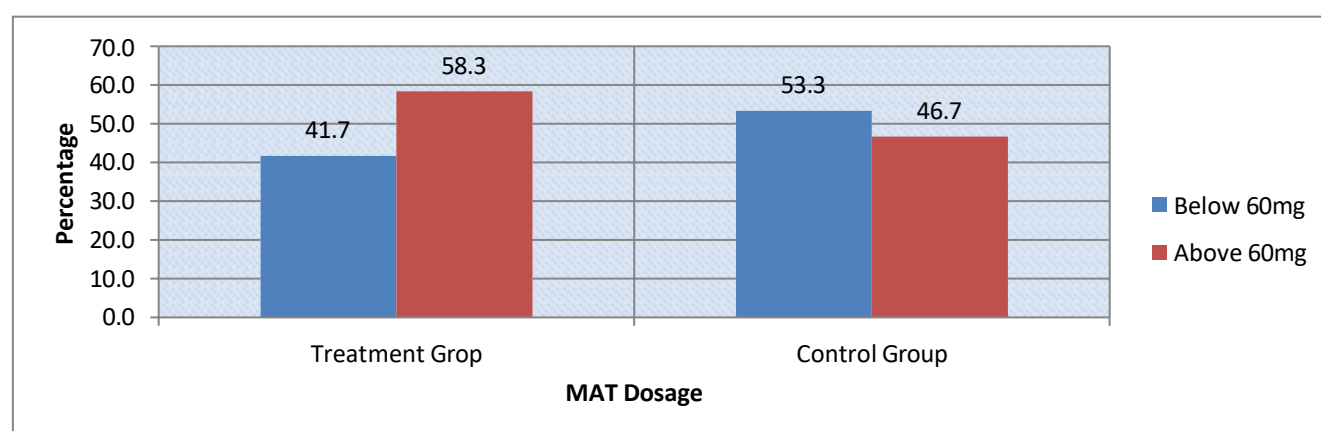
During End line assessment, the treatment group reported 80.4% (n = 41) of the MAT patients MAT dosage was below 60mg compared to 41.7% (n = 25) MAT patients from the control group whose MAT dosage was also below 60mg. The results findings are shown in Figure 13.
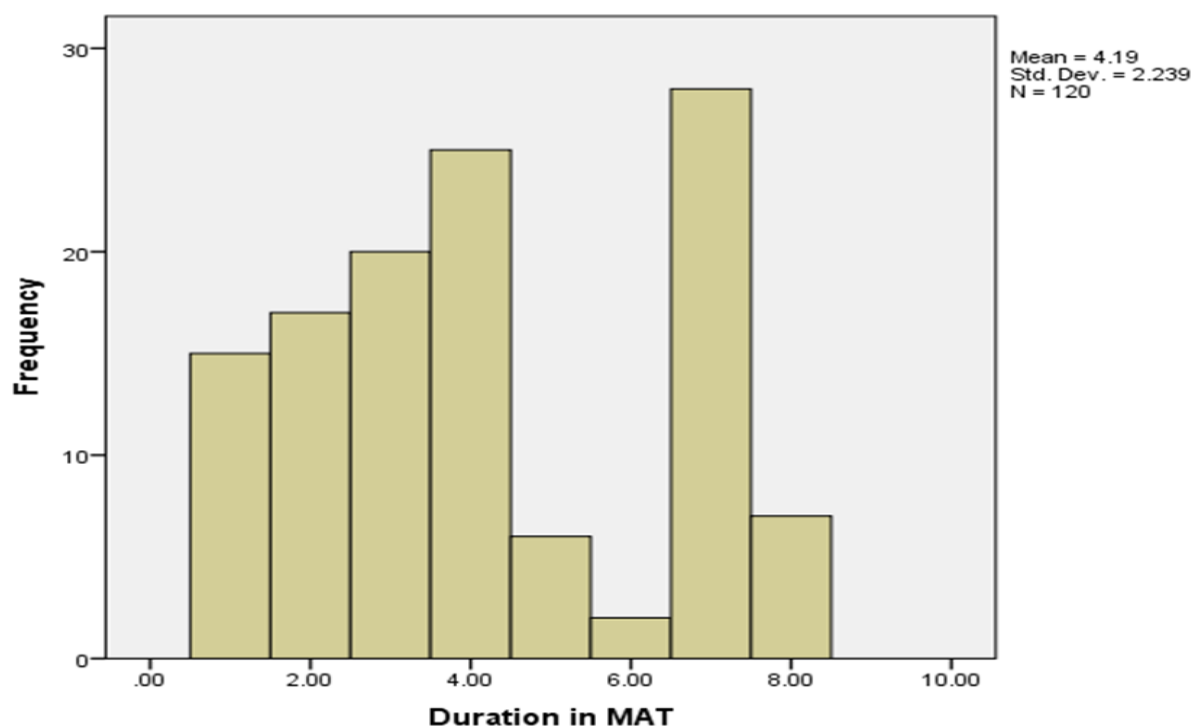
Figure 13:

MAT Dosage after MI

Comparing the findings on MAT dosage of the MAT patients from both the treatment and control group, reveals a significant increase in MAT patients from the treatment group that reduced their MAT dosage after being administered with the MI by 38.7% (41 vs. 25). The findings are supported by two of the MAT patients from the treatment group who were revealed to be on cessation of MAT due to reduction in polydrug use and simultaneously, reduction in MAT Dosage.

Figure 14:

Duration in MAT

MAT clinical records revealed the duration in MAT of the study participants as shown in Figure 14. Majority of the respondents 23.33% (n = 28) duration in MAT was between 6 to 7 years, 20.83% (n = 25) between 3 to 4 years, 16.67% (n = 20) between 2 to 3 years, 14.17% (n = 17) between 1 to 2 years, 12.5% (n = 15) between 0 to 1 years, 5.833% (n = 7) between 7 to 8 years, 5% (n = 6) between 4 to 5 years and 1.667% (n = 2) between 5 to 6 years. The duration of MAT patients in MAT clinic was distributed over a period of 10 years, with the mean duration being 3.7 years (SD= 2.239 years).

Figure 15:

Where do you Think you are Right now as far as Poly Drug Use Reduction is Concerned Using the Stages of Change?

At three months, majority of the respondents (93.6%) from the treatment group reported to be on the action stage, as far as polydrug use reduction is concerned using the stages of change as depicted in Figure 15.

V. DISCUSSION

At three months follow up, the results from baseline and endline assessment showed that after Motivation Interviewing, there was a reduction in polydrug use, improved wellbeing, adherence to MAT dosage, reduction in quantity of the MAT dosage, reduction in number of MAT patients missing their MAT dosage, addition of MAT patients on cessation and reduction of MAT patients dropping out of MAT.

A. Polydrug Use Reduction

Reduction in polydrug use is attributed to MAT. Past studies support the 7.18% reduction in polydrug use in the treatment group such as Singh et al. (2019) who argue that MI plays a critical role in the MAT

continuum of care in relation to adherence, retention and reduction of polydrug use. The study echoes that MI is one of the brief psychotherapy interventions (Miller & Rollnick, 2013) and is found to be effective in polydrug use reduction. Motivational interviewing is one of the most effective techniques for addiction recovery (SAMHSA, 2020b). The control group on polydrug use reduction supports that MAT is considered to have largely contributed to polydrug use reduction (Carlsen et al., 2020). Therefore, the current finding reveals that combining MAT and MI results in a positive treatment outcome than MAT alone. During MI evoking phase, the MAT patients were asked how important and confident it was for them to reduce polydrug use. Through MI self-rating ruler, they indicated very important, the study findings are echoed by SAMHSA, (2020) that MI works well with MAT patients who are in the contemplation phase of change; patients become curious about their experience and possible solutions.

B. *Well-Being of the MAT Patients*

There was improvement in the well-being of the MAT patients in the treatment group in comparison to those in the control group. Both treatment and control groups received WHO (Five) well-being bassline and endline assessment, in addition, the treatment group received MI and MAT treatment dosage as usual. At three months, the treatment group increased wellbeing from 25.52 to 41.85, increase of 16.33 and control from 25.07 to 29.81 increase of 4.74, a difference of 11.59. Current study outcomes on improved wellbeing contribute to the global sustainable development goal No. 3 on good health and wellbeing (Rieckmann et al., 2017).

The increase of wellbeing by 11.59 in the treatment group is attributed to the effectiveness of MI. This finding is supported by the argument that an effective MI plays a vital role of reducing polydrug use among patients undergoing MAT risks associated with its use to increase health outcomes and quality of life. Other studies support that Motivational interviewing empowers MAT patients to gain mastery and develop skills needed for achieving successful MAT recovery goals (Carlsen et al., 2020). Overall, the wellness and quality of life (QoL) outcome (Syvertsen et al., 2019; NIDA, 2019). On the other hand, the increase of 4.74 wellbeing in the control group is attributed to MAT. The findings are echoed by SAMHSA (2020b) that Methadone medication improves wellbeing of patients undergoing MAT. Despite the improvement in the wellbeing in the treatment group and control group, the average score was <50 at 95% confidence level. The study's positive outcome on improved wellbeing is echoed by the mental health task force on mental health and wellbeing towards happiness and national prosperity, Kenya (Ministry of Health Kenya, 2020).

C. Adherence to MAT Dosage

The result from baseline assessment revealed that the treatment group's 58.33% (n = 35) MAT patients had missed MAT dosage and 65.00% (n = 39) MAT patients from the control group missed MAT dosage at times due to polydrug use. At three months follow up, the endline assessment established MAT patients who missed MAT dosage at times due to polydrug use had a significance decrease in the number of MAT patients from the treatment group that missed MAT dosage by 38.33% after being administered with MI (35 vs. 12), and an increase in the number of MAT patients from the control group that missed MAT dosage by 11.67% (39 vs. 46). The effectiveness of MI is supported that it plays a critical role in the MAT continuum of care in relation to adherence (Singh et al., 2019). The findings agree with a study by Martino et al. (2019), who found that 20.5% of patients favored polydrug use reduction after MI focused on adherence and competence.

Other studies support this study's findings on the effectiveness of MI on reducing MAT patients' polydrug use and reduction in polydrug use among MAT patients, resulting in MAT retention and adherence (Syvertsen et al., 2019; Mital et al., 2015; Rhodes & Rhodes, 2018). The current study used MI and focused on adherence of assessment of missed MAT dosages and self-determination through MAT patients self-reports which assessed some of the skills that the respondents have gained since engagement, which included Self-control, confidence, assertiveness, calmness, control, trust, empowerment, different ways to reduce poly drug use, self-awareness, planning, effects of drugs on methadone, self-regulation, avoidance, setting targets, patience, MAT meaning, time management, set regulations, strategic skills, self-care, discipline, relaxing and polydrug use reduction skills. The listed outcomes are ground Self-Determination theory (SDT) by Ryan and Deci (1985) supporting intrinsic motivation development for self-regulation after MI. As a result, during MI, the MAT patients increased their desire to reduce polydrug use, internalized the skills gained through MI and integration of the skills as their own for their well-being and increased motivation. The study did not assess adherence to MAT dosage and education level and gender.

D. MAT Dosage

The study found that there was reduction in quantity of the MAT dosage in the treatment group from above 60mg during baseline assessment, to below 60 mg in endline assessment by 16 MAT patients after MI. There was an increase in quantity of the MAT dosage in the control group from below 60mg during baseline assessment, to above 60 mg in end line assessment by 7 MAT patients with no MI.

Studies support that MI reduces MAT patients polydrug use therefore, increasing wean off /reduction of methadone dosage (Syvertsen et al., 2019; Mital et al., 2015; Rhodes & Rhodes, 2018). The findings of this study on reduction MAT dosage is supported when the client regains responsibility in life, and indicators of quality of life are lived and experienced (Syvertsen et al., 2019; Sharma et al., 2016; WHO, 2019). Since both treatment and control groups are on their usual MAT dosage, the reduction in the MAT dosage may be attributed to the effectiveness of MI. Through MI interaction, the MAT clients gain self-efficacy through positive and sustainable change, through honest feedback from the investigator and other MAT patients in the group sessions, Lee (2019) supports the argument. The finding is grounded on social learning theory (SLT) by Bandura (1977) that supports learning through modelling and observation by MAT patients that increased confidence to change and readiness for change resulting in change of plans, a view agreed by (Levounis et al., 2017). The findings on MAT dosage increase or decrease is supported by SAMHSA (2018b), that while monitoring the patient's withdrawal and intoxication, each patient's methadone dose is commonly adjusted to achieve maintenance dose between 60-120mg. The patient's methadone dose is titrated until the patient reaches maintenance level where no withdrawal is experienced. The maintenance may be higher or lower, based on individual physiological characteristics and history of opioids use. However, it is worth noting that inadequate dosing of polydrug and other non-medical use psychoactive substances (Heikman et al., 2017).

E. Addition of 7 MAT Patients on Cessation of MAT

At three months follow up during endline assessment, the study found addition of 7 MAT patients on cessation. Out of the 7, 5 reported they were very important and 2 very confident on reducing polydrug use before MI. These findings support MI self-rating ruler prediction on test -retest as supported by MI outcome. Motivational interviewing self-rating ruler predict readiness, importance and confidence to reduce polydrug use which concurs with the 5 on important and 2 on confidence (NHS Health Scotland, 2015). Cessation of MAT is started when the client regains responsibility in life, and indicators of quality of life are lived and experienced (Syvertsen et al., 2019; Sharma et al., 2016; WHO, 2019). The MAT patients revealed gaining skills such as self-control and made own plans to reduce or to stop polydrug using values and strategies gained through MI. This anchored in Self-Determination theory (SDT) by Ryan and Deci (1985) that support MAT patient's intrinsic motivation development for self-regulation. Current findings revealed during end line assessment, among the 7, MAT patients had stopped polydrug use of heroin, alcohol, sedatives and hypnotics or otherwise, had reduced Cannabis /marijuana use from 30 rolls per day to 7 rolls a day with a plan of TFLB calendar.

Despite the study finding, no significant relationship between self-rating readiness ruler and polydrug use reduction, at three months, 93.6% MAT patients reported to be on the action stage as far as polydrug use reduction is concerned using the stages of change showing that MI had a positive impact. The endline was done at three months, maybe a relationship between self-rating readiness ruler and polydrug use reduction can be found at more than three months. Through self-report, MAT patients developed support plans to continue supporting polydrug use reduction past the MI through the skills gained. The strategy agreed by SAMHSA (2020a) that MI calls for the MAT patients past successful strategies and their history of recovery (SAMHSA, 2020a).

Findings from the study established that the mean duration in MAT was 3.7 years (SD = 2.2 years). However, the recommended MAT treatment period is a minimum of 24 months (CDC, 2020b) through which the patients are gradually weaned off Methadone. According to the treatment protocol by (SAMHSA, 2020a) and (NIDA, 2020b), the length of methadone treatment should be a minimum of 12 months though, it may take 24-36 months or many years, a view supported by this study n = 34 had been in MAT for over 6 years and a therapy treatment less than 90 days is considered less effective. The study did not however assess MAT patients on cessation per gender, level of education and support from the MAT significant others, correlation cessation of MAT after MI and duration in MAT which may have yielded valuable information.

F. *Reduction of MAT Patients Dropping out of Therapy*

The study found reduction in MAT patients dropping out of the therapy from baseline and endline assessment. The reduction of MAT patients dropping out was depicted by 49.97% for treatment group and by 10% for control group. Eric (2019) supports the findings, that MI is an adjunctive psychosocial treatment among MAT patients and at times, first line treatment for most patients with an OUD. The treatment and control group received MAT treatment as usual. The reduction of polydrug use by 49.97% in treatment group is associated with MI and 10% in control group with MAT. Therefore, the difference of 39.97% between treatment and control group is associated with MI.

This is agreed by Singh et al. (2019), that MI plays a critical role in the MAT continuum of care in relation to retention. Other studies that support MI effectiveness in MAT retention (Syvertsen et al., 2019; Mital et al., 2015; Rhodes & Rhodes, 2018). The study used 4 sessions of MI, 15-25 minute once a week and MI self-rating 5 to 10 with the treatment group of five. Other studies support that the number of sessions

and length has no influence on the effectiveness of MI. The length of the sessions ranged from five (5) minutes to (1) hour session, to one session or more than six (6) sessions of 1 hour (Levounis et al., 2017; Bahafzallah et al., 2019).

VI.   CONCLUSION(S)

At baseline follow up, there is more reduction in polydrug use in treatment group with MI than it is with control group with no MI. In addition, there are differences in polydrug use reduction of 7.18% between treatment and control group. Both treatment group and control received MAT dosage as usual hence, the difference shows effectiveness of MI in polydrug reduction. Well-being of the MAT patients in both treatment and control groups had poor well-being of less than 13 at baseline treatment group. After MI, MAT patients scored a higher well-being index at endline than the control group with no MI. Therefore, an improvement of the wellbeing index was reported among MAT patients for treatment group improved from average of 25.52 for baseline assessment, to 41.85 for end line assessment after MI. The differences of wellbeing index score in treatment group on average is associated with MI and that in the control group is associated with MAT.

There are differences in MAT patients who missed the MAT dosage reduced from n = 23 in treatment group and increased by n = 10 in control. Both treatment group and control received MAT dosage as usual. Therefore, the difference missing MAT dosage in treatment and control group shows effectiveness of MI in improving adherence to MAT dosage.

The study finds a reduction in quantity of the MAT dosage in the treatment group from above 60mg during baseline assessment, to below 60 mg in endline assessment by 16 MAT patients after MI. There was an increase in quantity of the MAT dosage in the control group from below 60mg during baseline assessment, to above 60 mg in end line assessment by 7 MAT patients with no MI. Both treatment group and control receive MAT dosage as usual. Therefore, the MAT dosage reduction in treatment and increase in control group of MAT dosage shows effectiveness of MI in reduction of MAT dosage. Reduction of MAT patients dropping out of MAT was high for treatment group associated with MI than for control group associated with MAT. Both groups received MAT treatment as usual. There was difference in reduction of polydrug use between treatment and control group, the former of which demonstrated effectiveness of Motivational Interviewing among MAT patients.

VII. RECOMMENDATIONS

This study makes the following recommendations:

a) Methadone assisted therapy clinicians should incorporate Motivation interviewing into their clinical practice to: Reduce polydrug use, improve wellbeing of the patients in MAT, increase adherence, reduce MAT dosage, increase patients in MAT on cessation of MAT dosage and reduction of patients in MAT dropping out to help them build a rational understanding of the impact of MI.

b) Reduction of polydrug use by MAT patients requires case management approach, methadone assisted cannot reduce polydrug use, however, MAT clinicians need to combine motivation interviewing together with Methadone assisted to reduce polydrug.

c) Implementation of motivation interviewing in MAT to reduce polydrug use by MAT clinicians is cost effective and reliable. Engaging patients in MAT increases intrinsic motivation and leads to transformation through skills, knowledge and attitude gained from MAT clinicians that impact on polydrug use reduction.

d) Implementation of MI through group-based therapy by MAT clinicians provides patients in MAT with a support system, shared experiences and reduction strategies that promote reduction of polydrug use.

e) For further research, motivation interviewing among patients in MAT with outcomes across gender, duration in MAT, MAT dosage, level of education and as a standalone with polydrug users outside MAT.

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