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Barriers to and Facilitators of Opioid Substitution Therapy in Penal Institutions: A Qualitative Study from Baden-Wuerttemberg, Germany

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Abstract

BACKGROUND: Opioid use is prevalent throughout prison populations worldwide. To date, opioid substitution treatment (OST) is considered as one of the most effective treatments for reducing drug-related harm associated with opioid dependence. Yet, large gaps prevail in the access and availability of OST in detention facilities in Germany. We investigated the views and attitudes of health professionals working in prisons in the federal state of Baden-Wuerttemberg towards OST and identified barriers and facilitators to the implementation of prison-based OST.

METHODS: We conducted semi-structured expert interviews with nine physicians and one psychologist working in prisons in Baden-Wuerttemberg. The data was analyzed in MAXQDA using a qualitative content analysis approach.

RESULTS: A majority of study participants (90%) held positive attitudes towards OST. Our findings suggest that concerns about OST medication diversion and the co-consumption of illegal drugs, insufficient staff capacity, and difficulties in ensuring continuity of care post-

release posed barriers to prison-based OST. Additionally, the prison setting, an adequate personnel infrastructure, and the availability of technical equipment were perceived as facilitating the implementation of OST. The participants highlighted the need for an increase in medical personnel capacities and for improved transition management between intra- and extramural treatment settings.

CONCLUSIONS: To improve drug using prisoners' health, intramural OST needs to be adapted more to the particularities of the prison setting such as offering less-divertible medication options and ensuring continuity of care after imprisonment. Research is needed on the acceptance of new OST medications among incarcerated populations and actionable treatment approaches.

Keywords: Opioid substitution therapy, prison, treatment barriers, treatment facilitators, Germany, Baden-Wuerttemberg

1. Introduction

Opioid use is a commonly occurring phenomenon in penal environments. This is globally observable in the frequency of detained persons' histories in substance use, trade, and dependence on intramural illicit drug consumption (Schneider et al., 2019; WHO et al., 2004). In Germany, an estimated 27% of the prison population were diagnosed with substance use dependence on entry to prison, with 5% of those dependencies attributed to opioids (Stoll et al., 2019, p. 18). Reber (2011) stated that the link between opioid use and imprisonment is also observable in the German federal state of Baden-Wuerttemberg where an estimated 19% of persons used opiates on entry to prison (Reber, 2011, p. 3). Opioid dependence is defined as a chronic disease in the medical field (DMDI, 2020; Ministry of Justice, 2014). This study adopts an interdisciplinary perspective to explain drug dependence, in which the latter is viewed as a multi-dimensional, biopsychosocially grounded phenomenon (Shafiee et al., 2019).

Opioid substitution treatment (OST) is a medical treatment for opioid dependence in which long-acting opioid agonists, such as methadone, levomethadone or buprenorphine, are administered to prevent withdrawal and reduce drug cravings (Keppler & Stöver, 2009). To date, OST is considered a highly effective medical treatment for opioid dependence in- and outside of prison (German Medical Association, 2018; WHO et al., 2004). OST, particularly maintenance treatment, is perceived as a harm reduction method efficient in penal settings (Stöver & Kastelic, 2014; Zurhold & Stöver, 2016). It is associated with the reduction of both illicit opioid use and use-related risk behaviors, such as injecting and syringe sharing, leading to lower transmission rates of infectious diseases (Hedrich et al., 2012; Larney, 2010). The application of OST has been associated with significant decreases in in-detention and post-release mortality (Gisev et al., 2015; Larney et al., 2014; Malta et al., 2019; Marsden et al., 2017), particularly when patients continue treatment following release (Degenhardt et al., 2014).

Compared to abstinence-oriented approaches such as detoxification, drug-free rehabilitation, or forced tapered withdrawal, OST in prison is associated with a lower risk of relapse, overdosing, and re-incarceration, an intra- and extramural decrease of drug-related criminality, and a higher community-based treatment adherence and retention (Hedrich et al., 2012; Malta et al., 2019). Overall, OST is considered to improve social (re)integration (Malta et al., 2019; Mattick et al., 2009). As opioid dependence is often accompanied by psychological, social, and somatic issues, the integration of psychosocial care into OST is considered to benefit treatment aims (German Medical Association, 2017, 2018; WHO et al., 2009).

In Germany, OST is tightly regulated by the federal Narcotics Law ("BtMG", 2020) and the federal Narcotics Directive ("BtMVV", 2018). To ensure (e-)quality of care, penal health providers are advised to follow the principle of 'equivalence of care' which requires the standards of care in prison to at least correspond to medical services provided in the community (Opitz-Welke et al., 2018; WHO et al., 2013). Healthcare in German prisons is based on the Penal Law ("StVollzG", 2019), for which legislative competence was transferred from the federal government to the states as part of the federalism reform in 2006 (Stöver and Keppler 2018; RKI 2018). Thus, the provision of OST in prisons falls under the exclusive financial and

regulatory responsibility of the Ministry of Justice of the respective federal state (Keppler et al., 2010), allowing for significant variability in OST practice and drug policies between federal states. Notably, Baden-Wuerttemberg has experienced a decisive shift in drug policy over the past decade, departing from its historically restrictive stance to more progressive policymaking, as demonstrated by the relatively recent implementation of OST in the state's prisons and correctional institutions since 2002 (Keppler et al., 2010).

The intramural OST coverage, defined as the amount of OST-eligible, incarcerated persons who receive OST, in Germany is estimated at merely 23.9% (Stoll et al., 2019) with significant regional differences reflected in substitution rates between 7% and 96% (Stoll et al., 2019; Stöver et al., 2019). Differences in the availability, application, and implementation of OST are also reported for the prisons in Baden-Wuerttemberg (Reber, 2011). There, treatment coverage of people with opioid dependence in prisons ranges between an estimated 9% (Stöver et al., 2019, p. 4) to 62.7% (calculated based on statistics by State Parliament Baden-Wuerttemberg, 2018b).

Prior research suggests that attitudes and beliefs of prison doctors and general staff (Polonsky et al., 2015; Stöver et al., 2019), patient behavior such as the diversion of OST medication (Alam et al., 2019; Kouyoumdjian et al., 2018; McKenzie et al., 2009), institutional barriers (Grella et al., 2020; McKenzie et al., 2009) as well as health system related barriers (Grella et al., 2020; Stöver & Michels, 2010) impede the implementation of OST in penal institutions. Different authors suggest that lower intramural OST provision rates in some federal states correlate with higher levels of abstinence-oriented attitudes and stances in penal institutions in these states (Keppler et al., 2010; Müller et al., 2017; Stöver, 2016b).

To date, little systematic research has been conducted on substance dependence treatment in German prison settings (Krebs et al., 2020). Focusing on the example of Baden-Wuerttemberg, a federal state of Germany, this study seeks (1) to assess attitudes, beliefs, and opinions of prison-based health professionals towards intramural OST, (2) to identify the barriers and facilitators regarding access and provision of OST in penal institutions, and (3) to explore possibilities for improved OST implementation.

2. Methods

2.1 Study Design

Given the exploratory nature of the research objectives, a qualitative research design was chosen. Semi-structured expert interviews were conducted with nine physicians and one psychologist working in prisons in Baden-Wuerttemberg. Within penal institutions, doctors carry the main responsibility and authority for the provision of medical services (German AIDS Support, 2015) and are often the only point of access to OST (Keppler et al., 2010). Given that opioid dependence is a complex phenomenon transgressing the purely pharmacological domain and that persons under OST should access psychosocial support, a psychologist was included in this study to complement and extent the clinical perspectives of physicians.

Follow-up questions and open-ended prompts were applied to encourage participants to elaborate further on their statements. The interview guide was piloted with a doctor specialized

in drug dependence to ensure internal validity. The interview guides were structured into four main sections: (1) introductory questions about the professional backgrounds of participants, (2) current OST implementation and prescribing practices in penal institutions in Baden-Wuerttemberg, (3) opinions and attitudes towards OST in penal institutions, and (4) barriers and facilitators to providing OST in prisons.

In line with the recommendations from the APA referencing guide (American Psychological Association, 2020) and scholarly work (Tran et al., 2018), person-centered language and non-stigmatizing terminology were employed in the interviews.

2.2 Participant Recruitment

The interview sample was non-random and purposive. With 10 experts of prison healthcare delivery, the sample size is fitted to the socio-geographical context of the study. All adult penal institutions in Baden-Wuerttemberg, a total of 17, and the prison hospital were contacted in April 2020 through invitation letters sent by post containing information about the study topic, which were followed up by emails and telephone calls. Of all contacted penal institutions, three did not respond, one responded after data collection had terminated, four declined to participate due to a (pandemic-related) lack of capacity and one for not employing a prison doctor full-time. Nine prison doctors and one psychologist from altogether nine penal institutions in Baden-Wuerttemberg consented to take part in the study. The general capacity of the prisons ranged from 144 to 652; the capacity of the closed prison sections ranged from 139 to 506. Of the closed prison population, an estimated 8.8% to 12.6% were OST patients. Hence, the study reflects the opinions and experiences of healthcare staff from more than half of the prison institutions in the observed state. Due to small staff bodies (zero to three prison doctors per institution), the sample size was restricted and due to the COVID-19 pandemic, slightly smaller than initially intended.

2.3 Sample Description and Data Collection

The ten interviews were conducted between July and August 2020 by phone (7) or in person in the respective penal institution (3). The interviewees represented a variety of clinical backgrounds and specializations, and the majority (70%) prescribed OST themselves (see Table 1).

All interviews were conducted in German and audiotaped. The duration of the interviews ranged from 28 to 76 minutes (mean: 49 min; sd: 15 min). All participants received written information about the interview and data protection at least one day prior to the interview. Informed consent to be interviewed and the interview to be recorded was obtained from the interviewees prior to beginning the interview.

Table 1. Overview of the sample of interviewees

Participant	Clinical background and specialization[1]	Additional certificate for treating drug dependence[2]	Tasks concerning OST	Years of employment in penal institution	Size of prison[3]
1	No specialization	(Y)	OST prescription	NA	Medium
2	Psychologist	NA	None	12	Small
3	General practitioner	Y	OST prescription	40	Small
4	Neurologist	Y	OST prescription	3	Medium
5	Psychiatrist	Y	OST prescription	NA	Large
6	No specialization	Y	OST prescription	31 (retired)	Medium
7	No specialization	Y	OST prescription	24	Small
8	Specialist for public health, social medicine and medical hygiene	N	Medical advisor[4]	2	Small
9	Neurologist, psychiatrists and psychotherapist	Y	Medical advisor	7	Large
10	Anesthetist	Y	OST prescription	3.5	Large

2.4 Data analysis

Qualitative content analysis according to Kuckartz (2018, 2019) was employed to analyze the data. The approach was chosen as it offers a clear systematic and rule-based procedure for the deductive-inductive development and subsequent analysis of categories and subcategories (Kuckartz, 2018; Schreier, 2014. The interviews were analyzed and coded with the aid of the software MAXQDA).

The barriers and facilitators of OST provision in penal settings in Baden-Wuerttemberg were categorized into (1) patient-related aspects, which refer to attitudes, behavior and characteristics of (potential) OST patients, (2) institutional factors, which pertain to structural, organizational, operational and regulatory characteristics of the penal institutions, and (3) systemic factors, which relate to the system of health care provision for opioid dependence during or after incarceration and in particular to the transitioning between treatment settings. These categories were partly deductively derived from the literature (e.g., Grella et al., 2020) and partly inductively developed from the data.

Direct quotes were used to illustrate categories and themes emerging from the data and were translated from German to English by the first author, who is a native speaker in both languages. Where applicable, data was quantified, for example using frequency counts, to improve the trustworthiness and generalizability of the findings (Bryman, 2012; Seale, 1999).

3. Results

3.1 OST implementation

All study participants reported the availability of OST, including access to psychosocial care, in their penal institutions, with about 10% of the prison population currently in treatment. Regarding the availability and implementation of OST, all participating institutions provided OST for an unlimited duration to eligible individuals. An overview of background information on OST implementation practices across the penal institutions included in this study is shown in Table 2.

Table 2. OST implementation practices in the nine participating penal institutions

Type of OST medication and additional care opportunities offered	Number of penal institutions
Methadone	9
Buprenorphine (sublingual tablets)	6
Buprenorphine (injection under the skin)	4
Levomethadone	2

Buprenorphine and naloxone	1
Psychosocial care[5] (as a requirement for OST)	5
Psychosocial care (as an additional treatment to OST)	3
Access to psychological care	9

3.2 Attitudes and opinions towards OST in penal institutions in Baden-Wuerttemberg

Nine of the ten interviewees rated OST positively. They described OST amongst others as an "important" (Participant 3; Participant 5; Participant 6; Participant 10) and "effective" (Participant 9, Participant 10) approach for treating patients with opioid dependence, which some referred to as a disease. OST was seen as a standard treatment regime in penal institutions:

[I]t is very, very important. And I think nowadays it is a therapy that really should be done everywhere. (Participant 10)

OST was commended for reducing the consumption of illicit substances and for reducing drug trade. Thereto related was the potential decrease in criminal behavior and recidivism and the reduction of tension and violence among incarcerated persons. The participants also reported resocialization and integration into institutional life, for example by restoring patients' ability to work, as positive effects of OST. One participant described this effect of OST on the interrelation between drug diversion, illicit substance use, and the atmosphere in prison as exemplary:

[T]ensions and problems in the prison are reduced, because illegality decreases. Because the people who are substituted hardly appear in the illegal area and therefore the number of complications, for example that people are in debt and then are threatened by those whom they do not pay back their money, and then have to be protected or transferred to another institution. That is reduced when you provide OST. (Participant 6)

More than half of the interviewees highlighted OST's harm-reducing effects, such as the reduction of intoxication from other illicit substances and the prevention of intravenous drug use:

There are many opiate addicts who will never get away from opiates. […] This means that you have to practically give people the opiate, sometimes probably for life, so that they can lead a normal life. […] And you have to understand methadone substitution or substitution treatment in and outside of prison as […] [harm reduction]. (Participant 6)

The securement and improvement of health in the form of stabilization of imprisoned persons' health status, mental recovery, rehabilitation and enabling the treatment of serious concomitant diseases were depicted as positive effects of OST. For example, one participant noted that:

[I]mprisonment and substitution in prison offers something like a rehabilitative chance. To ensure survival and then actually improve the treatment or make it possible in the first place. (Participant 4)

One participant, however, expressed ambiguous feelings towards OST due to feeling frustrated by relapses of patients with opioid dependence:

Substitution is necessary, but I am skeptical, because ultimately it is no use. They remain dependent despite substitution. They stay in co-consumption, they still remain criminals and they keep coming back [to prison]. (Participant 1)

3.3 OST vs. Abstinence-Oriented Treatment Approaches

The opinions towards the concept of abstinence differed considerably and were often ambivalent in nature. Compared to being abstinent from drugs, some participants perceived OST as only the "second best option" (Participant 9) and an "intermediate step" (Participant 2) to treating opioid dependence. Some affirmed that abstinence should be the ultimate goal and should eventually be pursued through long-term withdrawal programs.

Of note is the consensus regarding OST as a measure to 'open up the perspective of long-term abstinence,' thereby allowing patients to choose their preferred treatment approach and discovering a suitable path to live their lives, either 'with or without substitution.' One participant emphasized the necessity of OST to effectively treat patients and provide them with an opportunity for withdrawal and a drug-free life in the long term.

Contrasting these views, some interviewees criticized abstinence-oriented programs for having very low success rates as most incarcerated persons are "very severely addicted" (Participant 6; Participant 8). In this context, one interviewee pointed out changing opinions from abstinence as an ultimate goal to OST as a valuable treatment option:

It was just a gain of knowledge over the years, when you work with the patients for years, that substitution is a reasonable thing to do. Because at first I did not see that either because I thought abstinence is the golden path. The reality is that this golden path is not open to many people. They cannot do that. (Participant 6)

3.4 General Attitudes towards OST

Overall, the participants described "positive" (Participant 3; Participant 6), "accepting" (Participant 666) and "complacent" (Participant 444) stances within penal institutions and the criminal justice system in Baden-Wuerttemberg towards OST, and reported supportive attitudes by state institutions, particularly compared to the more restrictive OST-related attitudes and practices in the federal state Bavaria (Participant 4).

In the context of these questions, interviewees reported a shift among the physicians from abstinence-oriented inclinations towards acceptance of OST as a useful measure for treating opioid dependence. One participant attributed this shift to a generational change over the past years:

There is a rather negative attitude in the older generation. Now, in the new generation, I

experience that colleagues are certainly also striving for this additional qualification and want to integrate it. They are also increasingly willing to simply offer and continue [OST]. I had the impression that in the past one usually tried to persuade patients to abstain. (Participant 2)

3.5 Challenges and Barriers to OST Implementation in Prison

3.5.1 Patient-Related Challenges and Barriers

Misuse and dispersion of OST medication to persons not receiving OST were described by seven participants as a challenge to OST provision in prison. Participants described that special care had to be taken in the prescription dose and administration of OST medication as patients frequently attempt to sell the drugs on the prison internal black market, despite rigid controls by the medical staff:

The general disadvantages of substances, such as methadone or buprenorphine in tablet form, are that manipulation and fraud take place and illegal substances come into the subculture and become an object of trade used again for criminal activities. (Participant 9)

In a few cases, patients' reasons for refusing OST were mentioned. One participant pointed out that OST seems to be stigmatized and that patients appeared to feel a "real sense of shame" (Participant 10) towards their OST. Others reported that some deliberately choose to cease or avoid treatment in prison to prevent OST post-release:

There are also those who stop here and say that they just feel so stable that they don't really want to go into substitution outside because it's too [cumbersome] for them or because they have changed their place of residence or something else… coming by the practice every day. They want to use the time here and want to be withdrawn very slowly. (Participant 5)

3.5.2 Institutional Barriers

Concurrent use of other substances (polydrug use) was reported by almost all interviewees, either as a challenge during diagnosis and prescription, as patients were likely to "demand" (Participant 7) higher doses of OST medication or additional medication, and during treatment, due to the risk of intoxication or prolongation of the dependence. The over-prescription of OST medication and the over-prescription of additional substances – either in an extramural setting due to a lack of control of polydrug use or in other penal institutions – were perceived to be problematic. For example, the interviewees pointed out that the interaction between medication is unclear and that some medication can prolong or intensify dependence.

More than half of the interviewees named the lack of sufficient personnel capacity as a barrier to OST implementation. For example, one interviewee described the struggle to meet the demand for OST in his prison due to the incompatibility between the staffing situation and the required implementation:

We don't have the capacity to put ten men there and guard them when their stuff dissolves. Unfortunately, that doesn't work here. […] We have such a high quantity of patients and so much work that it just doesn't work." (Participant 10)

Some interviewees pointed out that they were unable to provide buprenorphine in sublingual

tablets due to a lack of time and capacity to administer and oversee medication intake. In particular, small penal institutions were perceived to be restricted by a lack of physicians certified to handle substitutions opioids.

Only in one prison, an interviewee felt so restricted by internal institutional policies and rules, which did not permit patients receiving OST to work, that this participant would encourage patients to consider abstinence-oriented treatments over OST despite having a positive opinion of OST. Prohibiting OST patients to work was also criticized by another interviewee.

[The policy] contradicts the meaning of substitution. It is supposed to stabilize someone so that they can lead a normal life again. And to me, that of course doesn't fit together at all. (Participant 8)

3.5.3 Systemic Barriers

One of the crucial challenges to implementing prison-based OST has been the transition from intramural OST to community-based OST programs, particularly because finding a doctor to continue extramural treatment is restricted by the insufficient number of physicians able to provide OST. One interviewee felt so restricted by their inability to ensure continuity of care, especially for inmates without a permanent German residence permit, that they recommended an abstinence-oriented approach to avoid recidivism:

There's no way to get an OST spot for them outside. And that means, which I try to make clear to them time and again, that in principle they have no other choice after their imprisonment than to get [OST medication] on the black market and therefore reoffend again. That is somehow a huge problem and I try to make them understand that detoxification is the better way […] I don't want to let the patient suffer, but I see it as a better solution that they get a chance to live abstinent when they get out of here. If they are in substitution until the day they are released, then they don't stand a chance. (Participant 7)

Another participant pointed out that some patients cease OST before being released from prison because transitioning between intramural and extramural settings can be a "very special stress situation" (Participant 4) for patients, particularly re-entering statutory health insurance and scheduling medical appointments. Given that the patients are "not even very stable people" (Participant 4), the interviewee argues that this is where they "lose some of the patients" (Participant 4).

Second, the transition between intramural OST and alternative intra- or extramural dependence treatment options was restricted by an insufficient range of OST-supported treatment options and long-term withdrawal programs, aggravated by disagreements about payment responsibilities between the prisons and health insurances. For example, participants criticized the lack of capacities for rehabilitative therapies, such as long-term withdrawal treatment during incarceration and OST-supported rehabilitation treatment.

The bottleneck is actually a substitution-supported rehabilitation treatment, if that is desired. Instead of imprisonment, so the keyword is 'therapy' instead of penalty. (Participant 4)

3.6 Facilitators to OST implementation in prison

3.6.1 Institutional Facilitators

A dominant theme throughout the interviews was that penal institutions were considered a suitable setting for implementing OST. Compared to extramural OST, the interviewees pointed out that they have better control over treatment compliance in terms of preventing concomitant substance use, reducing drug diversion through supervising drug administration and having "immediate access" (Participant 4) to patients to treat comorbidities. Compared to extramural OST administration, one participant highlighted the ability to counter (un)prescribed use of other drugs within a prison setting and therefore ensure more safety between the patient and physician:

I notice, of course, from the patients I take on that we have total, almost total, control over what is consumed. So outside, of course, a lot takes place on the black market or patients go to many different doctors. […] So we have much better control over the patients and for me also a higher safety because I know [the patient] doesn't go anywhere in the afternoon and drinks two more bottles of vodka, and then what happens with my substitution treatment? (Participant 4)

In one prison, the sufficient availability of personnel and technical capacities also facilitated the provision of OST. Having sufficient, reliable, collaborative, and adequately trained staff, possessing technical appliances like an automated methadone suspensor machine and working in interprofessional collaboration with social workers and drug counseling services, would enable better control and operational management of OST.

3.6.2 Systemic Facilitators of Treatment Combination

The ability to ensure continuity of care was facilitated by the availability of therapy motivation groups or therapy preparation courses. One doctor also reported that continuity of care was greatly facilitated by the formation of a new department at Tuebingen University Hospital specializing in OST, which showed interest in seamlessly continuing the treatment of substituted individuals who transition from incarceration to residing in Tübingen or its neighboring areas.

3.7 Suggestions for Improvement of OST Implementation

Most participants were content with the situation of care and reported that all incarcerated persons with indicated opioid dependence could theoretically access OST. When asked about potential improvement strategies to OST provision in penal institutions, only a few aspects emerged.

Regarding institutional aspects, the participants suggested that more staff, a wider range of additional therapeutic treatment opportunities, more consistent standardized treatment procedures and better opioid dependence diagnosis options could improve and facilitate OST implementation in penal institutions in Baden-Wuerttemberg.

Buvidal®, a prolonged-release buprenorphine, was mentioned as an enhancement to current

OST practices because its weekly or monthly application could reduce administrative burdens, manipulation attempts and enhance imprisoned persons' independence:

[T]here are almost no manipulation or fraud attempts possible. And it would also have a huge advantage: The prisoner is completely independent. This means that one does not have to go to the medical ward every day to pick up the substitution medication, which of course opens up other possibilities [at work]. (Participant 9)

However, the participants suggested that patients with opioid dependence sometimes favor the routine of taking medication every day rather than one injection every few weeks as in the case of Buvidal®. One participant also observed that community-based physicians frequently change the medication formulation back to sublingual buprenorphine tablets or methadone, possibly due to lower financial remuneration.

Regarding systemic aspects, some interviewees demanded that continuity of care, ideally throughout incarceration and after release, so called throughcare, should be guaranteed to inmates who want to become abstinent or inmates who receive OST. OST is meant to be a long-term, stabilizing treatment and one interviewee pointed out that ensuring continuous treatment would require making agreements with health insurance and pension insurance companies.

One participant addressed the broader issue regarding the criminalization of drugs and of persons with opioid dependence, who get punished instead by dealers on higher levels:

[W]hat is really problematic, and one would have to think about politically […] is that one locks up seriously ill people. And that the people who really make money with drugs and make a profit are very rarely seen in prison. These are actually always the sick people, who then become criminals because of their illness. (Participant 6)

Approaching this fundamental aspect requires a rethink of how drug use is handled at a societal level, and adopting a more progressive attitude towards opioid dependence and conceptualizing it as a disease rather than a criminal behavior, not only within the community but also in prison environments.

4. Discussion

4.1 Summary of Findings

The findings suggest that the participants' attitudes towards prison-based OST were largely positive, yet ambiguous regarding abstinence as a treatment goal. Reported barriers to OST implementation and administration included OST medication being diverted or co-consumed with other drugs, insufficient staff capacity, and difficulties in ensuring continuity of care throughout the transition between intra- and extramural opioid dependence treatment settings. OST implementation was reportedly facilitated by characteristics of the prison setting, an adequate personnel infrastructure, and the availability of technical equipment for OST. Some participants highlighted that to counteract these treatment barriers, less-divertible medication, such as injection formulations administered by physicians, might be more beneficial, paired with intersectoral agreements that guarantee a continuation of care after imprisonment.

4.2 Attitudes towards OST in the German Prison System

The endorsement of OST for the harm-reducing effects reported by the participants, support previous research and guidelines showing the positive effects of OST implementation in prison (Hedrich et al., 2012; Malta et al., 2019; Mattick et al., 2009; Ministry of Justice, 2014; Author's Own). Interestingly, the shift in the past years from abstinence-oriented mindsets towards OST-centered approaches to treat opioid dependence was mentioned by the participants. This contrasts prior research claiming that the German prison system focuses mostly on abstinence-oriented treatment for opioid dependence (Keppler et al., 2010; Keppler & Stöver, 2009; Stöver et al., 2004). The present study also partly contradicts previous findings of German prison doctors generally preferring abstinence-oriented approaches over OST (Stöver et al., 2019), for example because they view OST medication as psychoactive drugs that prolong a substance dependence (Kastelic et al., 2008; Keppler & Stöver, 2009; Stöver et al., 2006). Closely related to a recent study conducted in Bavarian penal institutions (Weiss et al., 2021), our findings show that attitudes towards treating opioid dependency with substitution therapy or abstinence-oriented treatments are ambivalent. They are also highly dependent on their own observed barriers to prison-based OST, for instance the lack of throughcare. Given the observed variability of OST implementation in Germany, within the same legal system (Buadze et al., 2020), our findings also highlight the differences in participants' experience of barriers, and thus the fragmented nature of penal OST care in Germany.

4.3 Barriers to Continuous OST (throughcare)

Perhaps the most substantial barriers to OST implementation in penal institutions in Baden-Wuerttemberg were systemic, in the transition from intra- to extramural OST, and vice versa, as described by the interviewees.

Insecurity in continuity of care has been identified as a major issue numerous times in scholarly work surrounding OST in penal-institutions in Germany (RKI, 2018; Schneider et al., 2019) and internationally (Grella et al., 2020). As observed in Germany before, the process of transitioning from the prison system to a new health insurance for health services lacks organizational structure (Stoll et al., 2019), which in turn may inhibit access to care post-release. The inability to guarantee continuity of OST care has resulted in elevated mortality rates among individuals using drugs following their release from detention (Binswanger et al., 2007; Merrall et al., 2010) as various cohort studies have indicated. A major cause of death behind opioid-related overdoses (Binswanger et al., 2013) has been the reduction of drug tolerance (Heinemann et al., 2002; Joudrey et al., 2019). Mortality rates are shown to be elevated particularly in the first weeks after discontinuation of OST (Degenhardt et al., 2014; Sordo et al., 2017), making this a pivotal time for effective treatment.

Researchers have highlighted throughcare as key in alleviating the risk of relapse or risk behavior and improving social reintegration post-release (Author's Own). This refers not only to continuing the provision of OST, but also to easing the transition period through psychosocial care, a key component of OST (German Medical Association, 2017; WHO, 2009), for example through a permanent contact who facilitates the patient's integration into

community-based treatment. To lower the risk of overdose after release, experts suggest providing patients with naloxone in take-home kits when they leave prison (Alam et al., 2019; Wakeman et al., 2009). In Scotland, a nation with an exemplary approach to OST where naloxone is a fundamental part of the prison release strategy (Jamin et al., 2021), the provision of naloxone kits upon release from prison was met by high willingness for use and led to a 36% reduction compared to the 5-year baseline in overdose-related deaths in the first four weeks (Curtis et al., 2018). This also applies in our studied context, as a feasibility study carried out in Bavaria showed that take-home naloxone upon release from prison can be successfully implemented in the German prison system (Wodarz-von Essen et al., 2022). In Baden-Wuerttemberg, the "Substitution via Telemedicine" pilot project in prisons, launched in 2021, intends to provide take-home naloxone as part of OST (Schneider et al., 2022).

Baden-Wuerttemberg's Commission of Experts for the Development of a Medical Concept in the Correctional System, German scholars and initiatives, recommend improving transition management of individuals undergoing OST post-release measures such as establishing naloxone programs and cooperation agreements with healthcare providers and job centers (Initiative Health in Prison, 2019; Ministry of Justice and for Europe, Baden-Wuerttemberg, 2021; Stoll et al., 2019). Further, the Expert Commission has made recommendations for various other improvements, including mandating specialized training in addiction medicine for prison physicians and enhancing transition management. Lower Saxony exemplifies good transition management practice in their coordination of the immediate admission of incarcerated persons with OST into statutory health insurance and thus community-based dependence treatment (Jobcenter Region Hannover, et al., 2016).

Participants reported difficulties finding post-release physicians willing to continue OST due to an insufficient number of OST-accredited physicians, a finding that mirrors federal data pointing to a continuous decrease of the number of physicians providing OST since 2011 (Federal Opiate Agency, 2019). One participant emphasized recommending abstinence over OST to avoid immediate medication needs upon release. Criticism was also directed at the scarcity of substitution-supported rehabilitation programs ("SuRe", substituted patients in abstinence-oriented rehabilitation) open to those with opioid dependence through the concept "therapy instead of penalty" ("§ 35 BtMG Deferral of the execution of the sentence", 2020). These programs are considered to facilitate the transition of people with opioid dependence into abstinence-requiring rehabilitation programs (Baden-Wuerttemberg Regional Association for Prevention and Rehabilitation, 2020; Schönthal et al., 2013). Taking into consideration that opioid users often are limited to choosing *either* medication-assisted treatment *or* an abstinence-oriented therapy program, easing the transition between these diverse treatment settings through substitution-supported programs can be vital to avoid relapse.

4.4 Baden-Wuerttemberg's Drug Politics

With the 3rd revision of the Narcotic Drugs Prescription Ordinance (NDPO), introduced in 2017, the German Medical Association was entrusted with medical therapeutic responsibilities for OST, providing greater legal certainty for the treatment (Lehman et al., 2021). Germany's decentralized federalist governance structure grants autonomy to each state to shape and

implement its drug policies, an approach that enables tailored responses to regional needs, cultural norms, and political ideologies, directly affecting the availability and accessibility of OST. Baden-Wuerttemberg has traditionally maintained a restrictive drug policy, ranking as the second most restrictive state in terms of OST, following Bavaria. However, recent years have seen a shift towards more liberal policies, exemplified by the establishment of drug consumption spaces in Karlsruhe and reflected in the generally positive attitudes towards OST by participants of this study. This may be attributed to the change in state coalition leadership in 2011 who have utilized their power at the state level to advocate for more liberal drug policies.

4.5 Alleviating Barriers through Prolonged-Release Medication

Similar to observations made in studies conducted in North America and England, in which physicians suggest that medication diversion and inconsistent adherence to medication are impediments to OST (Alam et al., 2019; Kouyoumdjian et al., 2018; McKenzie et al., 2009), the participants of this study expressed concerns about medication diversion, particularly of buprenorphine in sublingual form, and the concomitant use of illegal substances. To counter harmful drug use, experts suggest choosing misuse-deterrent formulations, such as buprenorphine/naloxone combinations (Mace et al., 2020; Wright et al., 2016) as naloxone is a competitive antagonist that counteracts the effects of most opioid analgesics (Bristow et al., 2014).

In response to drug diversion and the lack of medical staff, prolonged-release buprenorphine (implant or depot injection formulation) was considered by the interviewees to be a positive development, prospectively in facilitating safe OST administration. Prior research points out several benefits of long-acting opioid agonist formulations, including increased flexibility, less exposure to stigma for patients (Neale et al., 2018, 2019), and better adherence to OST (Itzoe & Guarnieri, 2017). A health economic calculation study concerning the German prison system suggests that buprenorphine in its depot injection formulation can be more cost-effective than other substitution drugs due to a reduction of medication costs as well as human and other resources (Stöver & Keppler, 2022). A recently published cost estimation analysis conducted in prisons in England suggests that using prolonged-release buprenorphine instead of methadone could reduce *total* costs of care for incarcerated people with opioid dependence (Wright et al., 2020).

4.6 Prisons as (Un)Suitable Settings for Persons with Drug Dependence

Overall, most participants deemed prison as a suitable environment for OST implementation because the setting allows relatively great control over treatment compliance through continuous contact with patients and stable medical and psychosocial support systems for persons with drug dependence. Using the theoretical concept of “setting” put forward by Zinberg (1984), which suggests that the physical and social environment of people who use drugs (PWUD) determines the mode of drug use, particularly a prison setting with its structured processes and the access to medical treatment may be advantageous for stable and effective OST implementation and the reduction of harmful drug use. However, penal institutions also pose an elevated risk for the transmission of infectious diseases to PWUD, partly due to the

limited availability of sterile injection equipment (Enggist et al., 2014), 2014). Considering that approximately 79% of offenses against the Narcotics Law are so called consumption-related offenses and mainly PWUD are affected by incarceration (Federal Criminal Office, 2020; Stöver, 2016a), who are often also burdened with somatic and psychiatric comorbidities (Enggist et al., 2014), their criminalization should be critically assessed. Or in the words of UNAIDS executive director Michel Sidibé: "People who use drugs need support, not incarceration" (UNAIDS, 2019, p. 1).

4.7 Strengths and Limitations

The qualitative framework of this study allowed an in-depth assessment of the complex personal perspectives towards prison-based OST of health care staff. Special care was taken to avoid methodological bias. For example, the single researcher bias was counteracted by discussing the research design, procedure and analysis with the second author. To ensure external validity, the interview questions were piloted with an extramural general practitioner specialized in addiction medicine with experience treating previously incarcerated patients.

Despite the attempt to include penal institutions regardless of their OST availability, no penal institution without OST could be recruited for this study. Therefore, particularly positive viewpoints may have dominated while opposing views may have been omitted. Potentially because OST was perceived to meet demand by most physicians and was described as an established approach to treating opioid dependence in penal institutions, participants struggled to elaborate on facilitators. Further, the generalizability of the results may be restricted by (1) being in part specific to the German - particularly Baden-Wuerttemberg's - legal and penal system, (2) being specific to OST implementation in closed prisons and (3) the small sample size. Thus, results need to be interpreted in other contexts with caution.

5. Conclusion

Regarding practice recommendations, this study highlights the urgent need for intersectoral cooperation between stakeholders in the healthcare sector and the criminal justice system. Particularly the implementation of harm-reductive measures, such as take-home naloxone kits, and policies to facilitate management processes during the transition between intra- and extramural treatment settings are required to ensure continuity of care. Within the context of policymaking, attention should be given towards structural improvements at the penal institutional level, in terms of sufficient medical staff capacity, and at the health systems level, in terms of availability of community-based OST-providing physicians and post-release medication-assisted or non-pharmacological care options for opioid users.

Drawing a comprehensive picture, future research could explore the patients' views on OST in the criminal justice system, thereby contributing to the evidence base elucidating potential reasons for low treatment coverage rates within some prisons. Considering the approval of prolonged-release medication, research is needed to discern the acceptance of new OST medication formulations among incarcerated persons.

Considering the principle of care equivalence and the strong empirical evidence supporting the effectiveness of prison-based OST, efforts should be made to alleviate current inequalities in

the availability of OST in Germany. Despite the acknowledged controversy whether treating opioid dependence is suitable within the realm of the criminal justice system, the delivery of OST in prisons constitutes a unique opportunity to provide treatment to imprisoned PWUD, a vulnerable population with a high burden of disease.

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Credit Author Statement

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AS: Conceptualization, methodology, validation, resources, writing (review & editing), supervision, project administration.

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§ 5 BtMVV Substitution, prescription of substitutes. (2018). Retrieved 01.10.2020 from https://www.gesetze-im-internet.de/btmvv_1998/BJNR008000998.html

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Notes

Note 1. English translation for the German term "Facharzt"

Note 2. English translation for the German term "Konsil/Konsilarzt"

Note 3. Y: Yes; N: No; (Y): Received full training but did not take the exam

Note 4. Small: Capacity of closed prison <200; Medium: Capacity of closed prison = 200-400; Large: Capacity of closed prison >400

Note 5: Refers to the availability of drug counseling services and other social services. According to the state standards of psychosocial care (PSC) in substitution treatment in Baden-Wuerttemberg, PSC should generally be provided by social workers from recognized addiction counseling centers. Psychosocial services should involve "standardized psychosocial, psychological and therapeutic diagnostic investigations and the determination of the overall health status" and includes, for example, the examination of the social situation of the patients (State Office for Dependence Matters Baden-Wuerttemberg, 2009, p. 4).