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Alcohol and other drug (AOD) staffing and their workplace: examining the relationship between clinician and organisational workforce characteristics and treatment outcomes in the AOD field

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ABSTRACT

While there is a long-standing and commonly held belief that the characteristics of the alcohol and other drug (AOD) workforce and workplace can impact client treatment outcomes, the available literature has not been systematically reviewed to date. Knowing which characteristics may impact treatment outcomes can help maximise workforce development in AOD services. A systematic review was undertaken, to identify studies of five clinician and organisational workforce characteristics: (1) years of clinical experience; (2) level of education/qualifications; (3) staff turnover; (4) staff-to-client ratio; and (5) professional development, and their relationship to client treatment outcome. Each study was assessed for quality using the Cochrane risk of bias tool. The search identified 1317 records; only 12 studies directly examined the relationship between clinician and organisational workforce characteristics and AOD treatment outcomes. Our analysis revealed a limited number of studies, a lack of high-quality research, and highly variable evidence regarding the relationship between clinician and organisational characteristics, and treatment outcomes. At present, there is an absence of evidence to support a strong association in any direction. Importantly, these findings illustrate the need for higher quality and larger scale research that focuses on clinician and organisational characteristics, taking into account multiple intervening and mediating factors.

1. Introduction

Alcohol and other drug (AOD) treatment can reduce consumption of AODs, improve health status, reduce criminal behaviour, improve psychological wellbeing, and improve participation in the community (Barnett, Sussman, Smith, Rohrbach, & Spruijt-Metz, 2012; Castells et al., 2010; Perry et al., 2013; Ritter et al., 2014; Smedslund et al., 2011; Sun et al., 2015). Successful AOD treatment outcomes are dependent on multiple factors. These include individual client characteristics (Ball, Carroll, Canning-Ball, & Rounsaville, 2006; Rawson et al., 2000; Ross et al., 2005), the type of treatment provided and its associated efficacy and effectiveness (Amato et al., 2005; Magill & Ray, 2009; Weisner, Matzger, & Kaskutas, 2003), the quality of the therapeutic relationship (Connors, Carroll, DiClemente, Longabaugh, & Donovan, 1997; Miller & Moyers, 2015; Ritter et al., 2002; Simpson et al., 2009), and of particular interest here, the characteristics of the workforce and workplace (Koutsenok & McClure, 2009; Nicholas, Adams, Roche, White, & Battams, 2013; Roche, O'Neill, & Wolinski, 2004; Roche & Pidd, 2010).

Indeed, the provision of effective treatment and high-quality AOD care requires a qualified, healthy and fulfilled workforce, and a safe and pleasant working environment

(Duraisingam, Pidd, & Roche, 2009). That clinicians play a pivotal role in ensuring quality care is also illustrated by the growing recognition of the need for workforce development strategies in national AOD frameworks across the globe (e.g. see Commonwealth of Australia, 2017). While initial responses to improve the AOD workforce largely focussed on the training of individual workers, over the last two decades there has been a shift in the conceptualisation of AOD workforce development that embraces a systems perspective (Roche & Nicholas, 2017). A 'systems approach' (Roche, 2002) targets a wide range of individual, organisational, and structural factors that impact on the ability of the AOD workforce to effectively respond to AOD-related issues (Roche & Nicholas, 2017; Skinner, Freeman, Shoobridge, & Roche, 2003). While there is an increasing body of research examining both individual and structural workforce factors, such as evaluations of training and educational needs (Ford, Bammer, & Becker, 2009; Nicholas et al., 2013; Roche, 1998), the impact of work stress and job satisfaction on turnover intentions (the intention to leave due to, for example, experiencing high levels of stress at work) (Duraisingam et al., 2009), and the implementation of clinical supervision as a central workforce development strategy (Roche, Todd, & O'Connor, 2007), little is known

about the clinician and organisational workforce characteristics directly associated with better treatment outcomes for people with AODs problems.

Despite a long-standing and commonly held belief that a high-quality workforce and workplace will result in improved client outcomes, empirical data on the relationship between clinician and organisational workforce characteristics and AOD treatment outcomes is lacking. This study therefore set out to systematically review published empirical research which examined the relationships between clinician and organisational characteristics and AOD client treatment outcomes. The literature evaluating the impact of clinician and organisational characteristics on treatment outcomes in the general healthcare sector, such as hospital care (Aiken et al., 2014), and mental health (Bambling, King, Raue, Schweitzer, & Lambert, 2006), provides a logical starting point in determining the broad parameters for the evaluation of the clinician and organisational characteristics that may impact treatment outcomes in the AOD field. Clinician characteristics that have been associated with treatment outcomes include years of clinical experience (McHugh & Lake, 2010; Tschuschke et al., 2015) and level of education (Aiken et al., 2014; Bostick, Rantz, Flesner, & Riggs, 2006), but their impact varies across types of treatment outcomes. For example, the mean years of experience of nurses has been significantly related to fewer medication errors and lower patient fall rates (Blegen, Vaughn, & Goode, 2001) but is not found to be a significant predictor of mortality in hospitals (Aiken, Clarke, Cheung, Sloane, & Silber, 2003).

Organisational characteristics (i.e. the workplace) that have been related to health outcomes are staff turnover rates (the total number of staff starting or quitting in a certain period of time) (Bostick et al., 2006; Castle & Engberg, 2005), staff-to-client ratio (Aiken et al., 2014; Chang, O'Malley, & Goodman, 2017; Driscoll, Currey, George, & Davidson, 2013), clinical supervision (Bambling et al., 2006; Vallance, 2005), and staff training (Davis et al., 1999; Forsetlund et al., 2009). Like clinician characteristics, studies examining these organisational aspects have found relationships in multiple directions, either positively, negatively or having no significant impact on patient outcomes. For instance, high staff turnover has been found to be associated with poorer patient outcomes including less physical activity (Williams & Potts, 2010) and higher rates of infections (Zimmerman, Gruber-Baldini, Hebel, Sloane, & Magaziner, 2002), while a recent study found that low turnover rates did not impact or improve treatment outcomes (in this case psychological distress) (Brandt, Bielitz, & Georgi, 2016). For both clinician and organisational characteristics, the choice of outcome measure is clearly an important variable in explaining some of the mixed results; and speaks to the poor generalisability to the AOD sector, where outcome measures specific to AOD treatment are required.

When looking at clinician workforce characteristics in the AOD field specifically, years of clinical experience and level of education are considered to be important factors contributing to the treatment outcomes of clients with AODs problems (Mulvey, Hubbard, & Hayashi, 2003; Siqueland et al., 2000; Wolinski, O'Neill, Roche, Freeman, & Donald, 2003). The level of education of service providers is considered pivotal

in the effective identification and/or management of AOD problems. Treatment approaches also require ongoing practice experience to be able to demonstrate the level of skill needed to apply the intervention efficiently (Miller, Sheppard, Colenda, & Magen, 2001). Accrued experience and highly qualified clinical staff could therefore lead to improved client outcomes and lower dropout rates. A skilled and knowledgeable AOD workforce is therefore considered essential for client progress (Boulton et al., 2014; Roche & Pidd, 2010).

In relation to the organisational context, AOD staff turnover is reported to be a common problem and regarded as costly and disruptive to therapeutic relationships (Roche & Nicholas, 2016). Minimising turnover and retaining workers are therefore considered important workforce development strategies in delivering high quality services and providing continuity and quality of care (Knight, Becan, & Flynn, 2012; Roche & Nicholas, 2016). Staff turnover is also closely related to staff-to-client ratios (e.g. staff leaving could result in a higher caseload of the remaining workers). Having a lower client-to-staff ratio is considered an important factor in AOD services, as treatment facilities with more staff per client should be able to invest more time and effort into their clients. However, treatment services experience pressure from funding sources and are required to do 'more with less' (Knight, Broome, Simpson, & Flynn, 2008; Ritter & van de Ven, 2019). Fewer personnel does not just lead to less quality time per AOD client – as the number of counselling sessions available to clients may decrease – but may also negatively impact the quality of the therapeutic relationship. Finally, clinical supervision and skills training can play an important role in the development of therapeutic competence of an AOD clinician (Roche et al., 2007; Roche, 1998; Schmidt, 2012). Both are considered central to workforce development strategies and are fundamental to workers' professional development. Clinical supervision can contribute to worker satisfaction and retention (Roche et al., 2007) and workforce satisfaction (Best et al., 2014), while training (i.e. continuing educational activities) may improve staff competence in providing AOD treatment (Miller & Mount, 2001; Laschober, de Tormes Eby, & Sauer, 2013). It is therefore expected that a clinically supervised and better trained counsellor will achieve superior treatment outcomes.

In summary, the dominant discourse in the AOD field seems to be that lower levels of education and years of experience, higher staff turnover, a higher workload, and poor clinical supervision and training, will negatively impact AOD treatment outcomes. However, the relationship between these clinician characteristics and client outcomes has rarely been empirically assessed. In addition, it may not necessarily be a simple, direct linear relationship. Confounding or intervening variables (between clinician and organisational characteristics, and outcome) may play a role. For example, high work stress and job dissatisfaction are significant predictors of turnover intentions, and turnover intention has been identified as having the highest predictive power on actual turnover (Duraisingam et al., 2009). We also note that 'treatment' is not a single unitary concept. There are many different types of AOD treatment (e.g. therapeutic communities, detoxication, outpatient counselling, etc.) and it cannot be
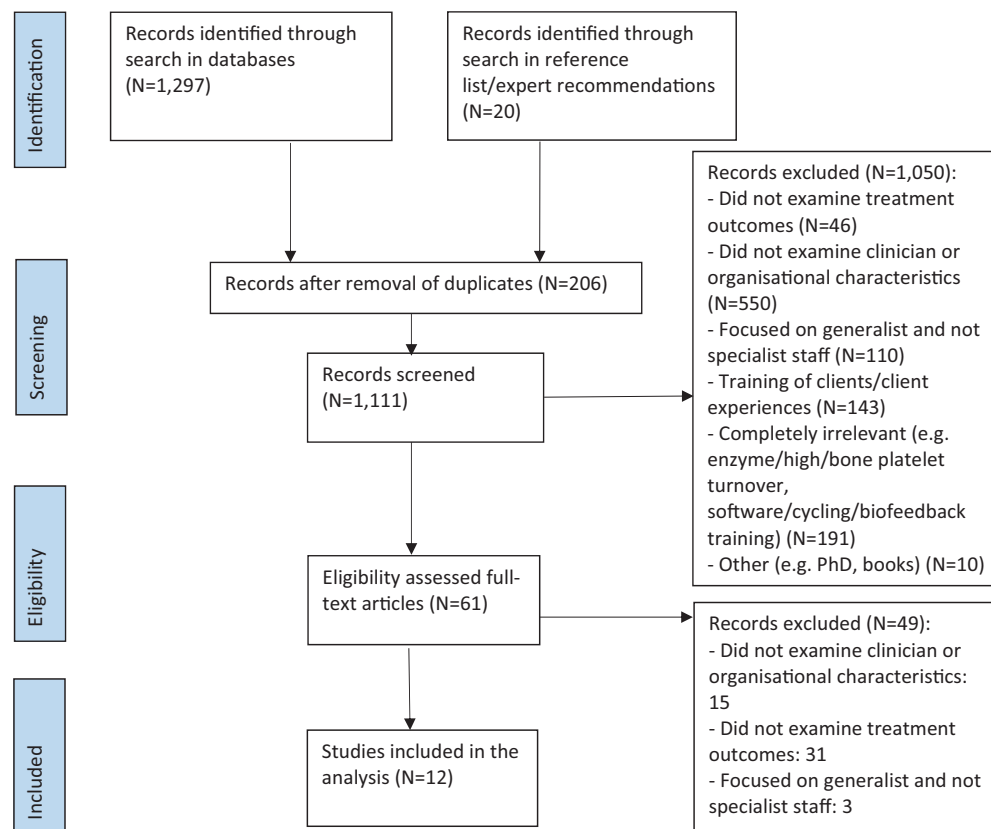
Figure 1. Flow chart for the systematic review process.

assumed that associations between clinician characteristics and treatment outcomes apply equally to all treatment types, or for that matter all client outcomes.

In starting to unpack these complex relationships and confounding variables, this systematic review is a first step to inform workforce development strategies by reviewing the empirical findings for the relationships between key clinician and organisational workforce characteristics associated with AOD client outcomes. The goal is to provide a structured, comprehensive analysis of the current evidence on workforce and organisational effects in relation to AOD client outcomes. We achieved this by addressing the following question: to what extent are clinician and organisational workforce characteristics associated with client outcomes of people experiencing AOD problems? To our knowledge, no prior study has undertaken this analysis. Improving our understanding of clinician and organisational characteristics that influence treatment outcomes is crucial to providing the best possible treatment to clients, and to support decision-making at an organisational level. This includes helping services make informed decisions about which workforce characteristics to support and invest in.

2. Methods

The methods and results are reported in accordance with the preferred reporting items for systematic reviews and meta-analyses (PRISMA) (Moher, Liberati, Tetzlaff, & Altman, 2009) (see Supplementary Appendix I for PRISMA checklist). We reviewed studies that explicitly examined the relationship between one or more clinician and organisational workforce characteristics and alcohol and drug treatment outcomes. The search was conducted early June 2018.

2.1. Eligibility criteria

2.1.1. Clinician and organisational workforce characteristics

Prior to conducting the search, we reviewed a broad range of interdisciplinary literature that examined clinician and organisational characteristics believed to influence treatment outcomes with emphasis on the healthcare sector. We also consulted with workforce experts to inform our search (e.g. what search terms to include in relation to workforce). The literature and expert consultations brought forward five main clinician and organisational categories that have been considered important or shown to be associated with treatment outcomes in the general healthcare literature: (1) years of clinical experience; (2) level of education/qualifications; (3) staff turnover; (4) staff-to-client ratio; (5) professional development (including clinical supervision and training). In our results section, we consider the clinician workforce characteristics (years of experience and level of education) separately from the organisational context (staff turnover, staff-to-client ratio and professional development).

2.1.2. Alcohol and other drug treatment outcome

The definition of an AOD treatment outcome included (1) changes in alcohol or other drug use and related harms after

treatment, (2) changes in psychological well-being, retention in treatment and (3) treatment completion. Perceptions of client engagement (such as participation, rapport and satisfaction during treatment) were not considered treatment outcome measures (Greener, Joe, Simpson, Rowan-Szal, & Lehman, 2007; Landrum, Knight, & Flynn, 2012; Ryan et al., 2014).

Inclusion criteria comprised English language studies published between 1980 and 2018 that measured treatment outcomes in relation to one or more of the clinician and organisational characteristics. Studies were excluded if they did not measure clinician or organisational workforce characteristics *and* treatment outcomes; or were focussed on generalist healthcare providers (such as GPs) and not specialist AOD staff. See Supplementary Appendix II regarding our PICOS criteria for inclusion and exclusion of studies.

2.2. Search strategy

Papers that focussed on clinician and organisational characteristics, and treatment outcomes in the AOD field were identified by carrying out searches on the major bibliographic databases that index international journals commonly used in the AOD field including PubMed, PsycInfo, the Cochrane Library, the Informit Health Collection, and Google Scholar. In addition, relevant reference lists were analysed, and workforce experts were contacted. The key search terms (list available from first author) covered the five main clinician and organisational characteristics and related terminology (in title or abstract). For example, in the case of 'staff-to-client ratio' we also searched using terms such as 'staff-to-patient ratio' and 'client-to-staff ratio'. The clinician and organisational characteristics were combined with terms related to the AOD field and treatment outcomes. An example of a search string, applied to each database, is:

(alcohol* OR substance* OR drug*)
AND
("organizational characteristic*" OR "organisational characteristic*" OR "level of education" OR qualification* OR expertise OR "worker wellbeing" OR "worker well-being" OR burnout OR "work stress" OR "job satisfaction" OR "work environment" OR "staff workplace" OR recruitment OR "staff retention" OR "years of service" OR "years of experience" OR supervision OR "clinical supervision" OR mentoring OR "career development" OR "professional development" OR "organisational change" OR "organizational change" OR turnover OR "staff consistency" OR "staff-to-client ratio" OR "staff-to-patient ratio" OR "patient-to-staff ratio" OR "client-to-staff ratio" OR training OR education OR experience OR workforce OR staff*)
AND
(treatment* OR intervention*)
AND
(outcome* OR "patient outcome*" OR "client outcome*" OR "treatment outcome*" OR "health outcome*")

The search strategies were developed with input from all authors and the help of a specialist librarian.

2.3. Study selection, data extraction and analysis

The initial search of databases yielded 1317 papers (see Figure 1). The reference management software Endnote was used to record all publications. One author (KV) conducted the database searches and screened the titles and abstracts of all publications obtained by the search strategy, with the second author (AR1) screening a sub-sample of the articles (10%). Sixty-one full text papers were retrieved and reviewed, which were all examined by two authors (KV and AR1). Both the initial screening and the full-text examination were followed by a rigorous discussion between the two authors to compare the results and discuss discrepancies. Forty-nine records were excluded (e.g. measured staff and not client treatment outcome, or they only generally discussed workforce). Thus, a total of 12 studies met inclusion criteria. Data extraction was done by hand in Word, using a coding schedule which identified 'Author(s)/Year and Summary', 'Country and Year(s) of Study', 'Design, participants and analysis', 'Clinician and Organisational Workforce Characteristics', 'Outcome Measures' and 'Results' (see Figure 1).

While we conducted a systematic review, as per PRISMA principles, we analysed the findings narratively as opposed to a statistical analysis of the results (e.g. meta-analysis). Statistical analysis of the results was not possible because the studies did not operationalise the workforce measures in the same way; similarly, no studies shared the same outcome variable (operationalised in the same way). Pooling of the results statistically would therefore be misleading. Hence, we conducted a narrative review, focussed on comprehensively and critically analysing the 12 studies against the five main clinician and organisational workforce characteristics and their relationship with client treatment outcomes.

2.4. Quality assessment

Many checklists and scales exist to assess the quality of studies and there is much variation as to how the results of a quality assessment should be handled in the analysis and interpretation of the results (Higgins et al., 2011; Moja et al., 2005). To assess the methodological quality, the risk of bias – as per PRISMA principles - was assessed for each study using the Cochrane risk of bias tool as a guideline as most of the studies reported herein were clinical trials. The risk of bias assessment included the following six domains (1) selection bias; (2) measurement bias; (3) detection bias; (4) attrition bias; (5) reporting bias, and; (6) other bias. Each study was assigned an overall quality rating of 'low risk,' 'moderate risk' or 'high risk'. A low risk study has the least bias, and results are considered valid. It uses appropriate means to prevent bias, measure outcomes, and analyse and report results. A 'moderate risk' study is susceptible to some bias but probably not enough to invalidate the results. Information may be missing, making it difficult to assess limitations and potential problems (unclear risk). A 'high risk' rating indicates significant bias that may invalidate the results. These studies have serious errors in design, analysis, or reporting and/or have large amounts of missing information. Two authors (KV and AR) independently assessed the sources of bias of each

study, which was followed by a comparison of the results and with discrepancies being discussed. We reflected on the findings in light of the quality of each of the 12 studies and gave greater weight to those studies with lower risks of bias (i.e. a high methodological quality) (see Table 2).

3. Results

Twelve studies directly examined the relationship between clinician and organisational characteristics and AOD treatment outcomes.

There was diversity in study designs and ways in which the clinician and organisational workforce characteristics were measured. Some studies directly assessed these characteristics (Garner, Rodney, & Hunter, 2013; Gaume et al., 2014; Project MATCH Research Group, 1998) whereas other studies represented a much more indirect measurement approach (De Leon, Hawke, Jainchill, & Melnick, 2000; Fiorentine & Anglin, 1997). Of the 12 studies, the majority had some risk of bias, ranging from no proper randomisation and small sample sizes to poor treatment outcome and/or clinician and organisational measures. Studies assessed as higher quality were Gaume et al. (2014), Woodward, Das, Raskin, and Morgan-Lopez (2006), Hser, Joshi, Maglione, Chou, and Anglin (2001) and Project MATCH Research Group (1998); all using a multi-variate analysis. See Tables 1 and 2 for details of the 12 studies.

3.1. Clinician characteristics

3.1.1. Years of clinical experience

Six studies empirically assessed the relationship between years of clinical experience and treatment outcomes (De Leon et al., 2000; Gaume et al., 2014; Miller, Taylor, & West, 1980; Project MATCH Research Group, 1998; Sanchez-Craig, Spivak, & Davila, 1991; Schulte, Meier, Stirling, & Berry, 2010). Of these studies, only Gaume et al. (2014) and Project MATCH Research Group (1998) were of high quality. The study by Schulte et al. (2010) was of moderate quality and the remaining three studies were of low quality (De Leon et al., 2000; Miller et al., 1980; Sanchez-Craig et al., 1991).

Mixed outcomes were reported for the three studies of low methodological quality. Of these, Sanchez-Craig et al. (1991) and De Leon et al. (2000) found that more experienced therapists had more problem-free clients, while Miller et al. (1980) found no significant association between the level of the therapists' experience and client outcomes.

Two studies, one of moderate (Schulte et al., 2010) and one of high (Gaume et al., 2014) quality, used regression analyses to examine the experience/outcome relationship. Schulte et al. (2010) examined the relationship between staff characteristics (i.e. training, self-rated competency, therapeutic optimism, level of experience) and 90-day retention rates among dual diagnosis clients in outpatient addiction treatment. They found practitioners' clinical work experience was not significantly related to client retention. Conversely, Gaume et al. (2014) found a positive association between clinicians' years of experience and alcohol use outcomes

among non-treatment-seeking young Swiss men given a brief motivational intervention (BMI). In addition to a significant ($p = .02$) decrease in alcohol use among clients in the BMI group compared to the control group (assessment only), the results showed that both overall clinical experience (5 years or more) ($p < .01$) and MI experience (2.5 years or more) ($p < .05$) were associated with greater alcohol use reductions.

The only study that used a multivariate analysis found mixed results depending on the type of treatment provided (Project MATCH Research Group, 1998). The Project MATCH Research Group examined therapist effects on retention and AOD use within three psychosocial treatments (12-step facilitation, cognitive–behavioural skills training and motivational enhancement therapy) for alcohol problems. Therapists were nested within treatments, selected and trained for expertise in a specific approach. They found that years of experience predicted very little ($<3\%$) variance in motivational enhancement therapy and cognitive behavioural therapy outcomes. For 12-step facilitation, the findings were significant – but in the opposite direction to that predicted, with fewer years of clinical experience associated with better treatment outcomes ($p < .05$). More favourable client outcomes during aftercare treatment (months 1–3) and during follow-up (months 4–15) were predicted by fewer years of experience in treating substance abuse.

3.1.2. Level of education (qualifications)

Three studies (Hser et al., 2001; Project MATCH Research Group, 1998; Woodward et al., 2006) examined the relationship between clinician level of education or qualifications and client treatment outcomes. All studies were of high methodological quality and used multi-variate analyses. However, different outcomes were identified (negative, positive and non-significant relationship) (see Table 2). Depending on the treatment provided, Project MATCH (Project MATCH Research Group, 1998) found no significant association between clinician educational attainment and client treatment outcomes for two of the three treatment modalities (CBT and MET). For 12-step facilitation, the association was significant, with fewer years of therapist education associated with *more* favourable treatment outcomes.

Hser et al. (2001) examined the effects of programme and client characteristics on client retention in residential drug treatment programmes, outpatient drug-free programmes, and methadone maintenance programmes. Non-significant findings were reported; there were no significant treatment outcome effects (client retention) for the ratio of licensed/credentialed staff to total treatment staff in the three treatment modalities studied. However, Woodward et al. (2006) examined the relationship between client outcomes (client retention and treatment completion) and qualifications. They found a significant positive relationship between the percentage of counsellors with advanced degrees and treatment outcomes ($p < .0001$). In addition, their multilevel analysis showed a statistically significant interaction between the proportion of counsellors with advanced degrees and client age ($p < .0003$), with younger clients achieving greater treatment outcome benefits.

Table 1. An overview of the included studies (N = 12).

Author(s)/year and summary	Country and year(s) of study	Design, participants and analysis	Clinician and organisational characteristics	Outcome measures	Results
1. De Leon et al. (2000). This study reported findings from a controlled study that assessed the efficacy of a 'senior professor' (SP) intervention to reduce early dropout in a residential therapeutic communities (TCs)	US; 1984–1986	Two trials of the SP (most experienced staff) intervention were conducted on separate cohorts (N = 362 in Trial 1; N = 243 in Trial 2). Bivariate and multivariate analyses to test for associations.	Years of experience (with SPs having higher experience)	Treatment retention (proportion of treatment drop-outs)	Significantly higher 30-day retention for the SP groups (p < .00), but not at later retention periods, and moderated by client motivation level. This suggests that more experienced clinicians are associated with lower early TC treatment drop-out, especially amongst less motivated clients
2. Fiorentine and Anglin (1997). This study examined the effects of increasing the opportunity for group and individual counselling opportunity on client participation in counselling and whether this enhanced the effectiveness of drug treatment	US; 1991–1994	A quasi-experimental design involving a prospective longitudinal assessment of clients (N = 319) in outpatient drug treatment programmes in Los Angeles County, with 6 months post-treatment follow-up. Comparison between clients of 'Target Cities' programmes (N = 16 programmes) which received additional resources and clients of control programmes (N = 9 programmes)	Staff-to-client ratio (caseload)	AOD use (client needs-services-outcomes questionnaire was administered)	The clients of the 'Target Cities' programmes received significantly more counselling and had better treatment outcomes (p < .01). However, it is not clear that this result can be attributed to lower staff caseloads because actual caseload data were not obtained. 'Interviews with the Directors of the Target Cities programs, however, revealed a general agreement that caseload was reduced as a consequence of the Target Cities intervention' (p. 376)
3. Garner et al. (2012). This study examined the impact of staff turnover on adolescent treatment outcomes of AOD clients	US; not specifically mentioned	Annualized rates of clinical staff turnover at 34 US treatment organisations (with 249 staff in total); client (N = 3486) outcome data from the GAIN. Multilevel regression analyses used to examine associations	Staff turnover at organisational level (start and end dates were recorded)	AOD use (the percentage of days of use; GAIN measures were administered)	The authors did not find a statistically significant relationship between staff turnover and AOD use. However, the authors did find an unexpected direction in that higher rates of turnover are significantly associated with other GAIN measures including lower client-level social risk and lower client-level involvement in illegal activity
4. Garner et al. (2013). This study examines the impact of AOD clinician turnover on adolescent treatment outcomes	US; not specifically mentioned	This study is an extension of Garner et al. (2012) (see above) but instead of measuring turnover at an organisational level, examined the impact on clients of their own staff turnover (controlling for client background characteristics). Data came from 27 treatment organisations (staff n = 144 and client data n = 2012). Multilevel regression analyses were used to examine associations	Staff turnover at individual client level (start and end dates were recorded)	AOD use (the percentage of days of use; GAIN measures were administered)	The unadjusted relationship between turnover and the GAIN measures shows that, relative to adolescents who did not experience any turnover, adolescents who experienced both direct and indirect turnover had significantly higher percentage of days using alcohol or other drugs (p = .021). Yet, the subsequent multilevel multivariate regression analyses, adjusting for adolescent background measures, show that none of the turnover measures were statistically significant for any of the six GAIN treatment outcome measures examined
5. Gaume et al. (2014). This study examines the influence of counsellors on brief motivational intervention (BMI) efficacy in reducing alcohol use among non-treatment-seeking young men screened as hazardous drinkers	CH; not specifically mentioned	A randomised controlled trial. Participants (i.e. hazardous drinkers) were randomly allocated to (i) a group receiving a single BMI from 1 of 18 counsellors (N = 217); or (ii) a control group receiving assessment only (N = 224). Regression analyses	Years of experience (clinical experience and MI experience)	Alcohol use (number of drinking days and amount of drinks)	Both overall clinical experience (5 years or more) (p = .01) and MI experience (2.5 years or more) (p = .05) were significantly associated with greater alcohol use reductions

(continued)

Table 1. Continued.

Author(s)/year and summary	Country and year(s) of study	Design, participants and analysis	Clinician and organisational characteristics	Outcome measures	Results
6. Hser et al. (2001). This study examines to what extent programme characteristics and client characteristics influence client retention in treatment	US; 1992–1993	to examine associations between client outcomes and years of clinical experience of therapists. Using three programmes (residential, drug-free programmes and methadone maintenance programmes), client data ($N = 26,047$) from administration and discharge records for individuals entering treatment programmes in LA County was analysed against programme data (collected from programme directors via survey). Logistic regression hierarchical linear modelling was the analytic method	Staff-to-client ratio (caseload) and level of education (ratio of licensed/credentialed staff to treatment staff; and ratio of recovering counsellors to treatment staff)	Client retention (retention was categorised with (i) a 180-day threshold for residential and drug-free programmes, and; (ii) with 360 days for methadone maintenance programmes)	A lower caseload significantly increased clients' time in treatment for residential programmes ($p < .05$) but no significant effect was found for the other two programmes. Level of education was not included in the multi-level model, as it did not reach significance in univariate analysis for any of the three treatment types. The multilevel analysis showed that for methadone maintenance programmes a high ratio of recovering staff were associated with lower client retention ($p < .05$)
7. McCaughrin and Price (1992). This study examines organisational features that affect outpatient AOD treatment outcomes	US; 1988	This study used data from a national survey of outpatient non-methadone drug misuse treatment units ($N = 394$ treatment units) and surveyed organisational features (via telephone survey). Relationship to outcomes was examined using multivariate analyses	Staff-to-client ratio (ratio of clients to treatment staff)	AOD use at programme level (% of clients abstaining)	Units with more clients per treatment staff member were significantly related to having a higher percentage of clients who continued to misuse drugs or alcohol ($p < .01$)
8. Miller et al. (1980). This study compares the effects of focussed (self-help vs. therapist administered) and broad-spectrum treatment (standard vs. individualised programmes) on treatment outcomes of problem drinkers	US; not specified	Clients ($N = 41$) were randomly assigned to one of the four treatment conditions: (i) bibliotherapy, in which clients received self-help materials but no treatment sessions, (ii) behavioural self-control training (BSCT), consisting of six weekly sessions, (iii) BSCT plus 12 weekly sessions of relaxation, communication, and assertion training, or (iv) BSCT plus 12 weeks of individually tailored broad-spectrum modules. ANOVAs used to assess associations between years of clinical experience and treatment outcome	Years of experience (treatment experience ranging from 1 to 7 years)	Alcohol use (average weekly alcohol consumption)	The number of years of prior clinical experience was unrelated to client outcomes
9. Project MATCH Research Group (1998). This research project examines therapist effects on retention and outcomes within three psychosocial treatments for alcohol problems	US; not mentioned	Therapist differences were examined within a multisite ($N = 1726$ clients) randomised trial of three psychosocial treatments for alcohol problems: (i) 12-step facilitation (TSF); (ii) cognitive–behavioural skills training (CBT); and; (iii) motivational enhancement therapy (MET). Therapists ($N = 80$) were nested within treatments, selected and trained for expertise in a specific approach. One-way multivariate	Level of education (highest level of education) and years of clinical experience (years of TSF, CBT or MET experience)	AOD use (% of days abstinent and drinks per drinking day) and client retention (number of treatment sessions attended by each client)	Therapist education and years of experience predicted very little (<3%) variance in MET and CBT outcomes, but were negatively related to TSF outcomes (up to 11.6% shared variance) ($p < .05$). Meaning that for the TSF condition, more favourable client outcomes during aftercare treatment (months 1–3) were predicted by fewer years of therapist education ($r = -0.34$) and fewer years of experience in treating substance abuse ($r = -0.31$). Among outpatient

(continued)

Table 1. Continued.

Author(s)/year and summary	Country and year(s) of study	Design, participants and analysis	Clinician and organisational characteristics	Outcome measures	Results
		analyses of covariance used to examine associations			TSF therapists, client abstinence during follow-up (months 4–15) was related to fewer years of therapist experience ($r = -0.23$)
10. Sanchez-Craig et al. (1991). This study examined the effects of three brief treatments designed to promote sensible drinking or abstinence in problem drinkers	CAN; not mentioned	A randomised trial. Participants ($N = 96$) were randomised to one of three treatments: (i) manual: three sessions of instructions to use step-by-step manual for attaining abstinence or moderate drinking; (ii) guidelines: three sessions of advice using a pamphlet summarising the contents of the manual, and; (iii) therapist: application of the step-by-step method in an indefinite number of sessions. Participants were recruited through advertisement offering brief treatment for those wanting help in reducing their alcohol intake. One-way ANOVA	Years of experience (two groups: (i) 15 years of treatment experience, and; (ii) new to treating persons with AOD problems)	Alcohol use (number of drinking days and amount of drinks)	The experienced therapists had more moderate drinkers than the inexperienced therapists, both at 3-month follow-up ($p = .047$) and at 12 months ($p = .022$). At 12 months, experienced therapists had more problem-free clients ($p = .001$)
11. Schulte et al. (2010). This study examines the relationship between staff characteristics and 90-day retention rates of dual diagnoses clients in outpatient addiction treatment	UK; not mentioned	The study used a 3-month follow-up design involving dual diagnoses (DD) clients ($N = 124$) starting treatment at 6 UK addiction services. Treatment included predominantly substitute prescribing and structured counselling but also community and inpatient detoxification programmes. Practitioners ($N = 46$) treating these clients were assessed regarding their DD specialisation levels. Cox regression analyses	Training (recent training, training level and training length) and years of experience (treatment experience in DD field)	Client retention (retention status was recorded 90 days after intake. In case of dropout, length of stay was calculated)	Practitioners' years of work experience and training were not significantly related to client retention
12. Woodward et al. (2006). This paper examines the empirical relationship between treatment inputs and client outcomes	US; 1996–1999	Data from the Alcohol and Drug Services Study (ADSS) was used including 2400 substance abuse treatment facilities. In the first phase, data were collected from telephone interviews of 2395 treatment facility administrators. Phase II involved site visits to 280 selected facilities (stratified subsample) and included an in-person interview with the facility director or administrator. Phase II administrator data were used as the basis for the ADSS Cost Study, the main source of data for this study. Hierarchical linear model	Staff-to-client ratio (sum of the total number of counsellors divided by the total number of admissions) and level of education (proportion of counsellors with advanced degrees)	Client retention (treatment duration) and treatment completion ('discharge status' variable)	A statistically significant effect between the percentage of counsellors with advanced degrees and treatment outcomes was observed ($p < .0001$). In addition to this, their multilevel analysis showed a statistically significant interaction between the proportion of counsellors with advanced degrees and client age ($p < .0003$); greater impact for younger aged clients. The staff-to-client ratio was not a significant (univariate) predictor of retention and was therefore not included in the multi-level analyses

Table 2. The outcomes of the studies and their methodological quality (low, moderate or high).

Quality	Years of experience (longer)			Qualifications (higher)			Turnover (less)			Staff-to-client ratios (lower caseload)			Professional development (more)		
	Low	Mod	High	Low	Mod	High	Low	Mod	High	Low	Mod	High	Low	Mod	High
Not significant	8	11	9	–	–	6 and 9	–	3 and 4	–	2	–	6 and 12	–	11	–
Significant (positive)	1 and 10	–	5	–	–	12	–	–	–	7	–	6	–	–	–
Significant (negative)	–	–	9	–	–	9	–	3	–	–	–	–	–	–	–

The numbers in the table refer to the study numbers from Table 1, e.g. 1 = De Leon et al; 2 = Fiorentine & Anglin; and so on. Some studies reported more than one result across the different clinician and organisational workforce characteristics.

3.2. Organisational characteristics

3.2.1. Staff turnover

Despite the widely held assumption that staff turnover negatively impacts client treatment outcomes, we located only two studies that had empirically examined this assumption in the AOD treatment field (Garner, Hunter, Modisette, Ihnes, & Godley, 2012; Garner et al., 2013). Both studies were of moderate methodological quality and used multilevel regression analyses. Data used in both studies were collected from US treatment organisations (SAMHSA/CSAT) that were part of a special initiative aimed at improving adolescent substance use treatment outcomes which, amongst other strategies, involved increased funding. The primary treatment outcome of interest was percentage of days of use. In the first study, Garner et al. (2012) found no statistically significant relationship between staff turnover at an organisational level and the primary treatment outcome of the client, even after controlling for intake severity. However, they did report a statistically significant relationship between staff turnover and other client outcomes, including social risk and involvement in illegal activities. This was not in the expected direction - higher rates of staff turnover were significantly associated with lower client-level social risk and lower client-level involvement in illegal activity. Meaning that clients were less likely to get involved in illegal activities and had a lower risk of engaging with people that, for example, were involved in illegal activities and substance use, when there were higher rates of staff starting or quitting at the AOD treatment organisation.

In a follow-up study, Garner et al. (2013) reported similar findings in that staff turnover as experienced at a client level was not associated with adverse treatment outcomes. In this study, both 'direct turnover' (adolescents who had their clinician turnover during their treatment episode) and 'indirect turnover' (no direct turnover but adolescents may have been indirectly impacted due to turnover of other clinicians at the organisation) were measured. An initial analysis of the unadjusted relationship between turnover and treatment outcomes revealed the only statistically significant finding was that relative to adolescents who did not experience any staff turnover, adolescents who experienced *both* direct and indirect clinician turnover had significantly higher percentage of days using alcohol or other drugs ($p = .021$). However, the subsequent multilevel multivariate regression analyses, adjusting for adolescent background measures, showed that none of the turnover measures were statistically significant for any of the treatment outcome measures examined.

3.2.2. Staff-to-client ratio

Four studies (Fiorentine & Anglin, 1997; Hser et al., 2001; McCaughrin & Price, 1992; Woodward et al., 2006) evaluated the impact of caseload (i.e. staff-to-client ratio) on treatment outcomes. Mixed results were found. Hser et al. (2001) and Woodward et al. (2006) studies were of high methodological quality, and the other two studies (67, 75) were of low quality. Of the low-quality studies, Fiorentine and Anglin (1997) examined caseload and client participation in counselling and found no statistically significant relationship that was attributable to poor record keeping, high staff turnover, and lack of standardisation in the method used by the treatment providers to measure caseloads. McCaughrin and Price (1992) found that more clients per staff member was associated with a higher percentage of clients who continued to misuse drugs or alcohol. Although McCaughrin and Price used a multivariate analysis, the treatment outcomes measure was highly questionable (clinical supervisors' estimates of client relapse) and was therefore deemed of low-quality.

Hser et al. (2001) found lower caseloads significantly increased clients' time in treatment for residential programmes ($p < .05$) but no significant effect was found for the outpatient drug-free and methadone maintenance programme. That is, for both programmes, caseload did not influence the length of stay in treatment (i.e. did not increase clients' time in treatment). Woodward et al. (2006) found no significant effects for caseload on treatment outcome. Data from the alcohol and drug services study (ADSS) were used, including 2400 substance abuse treatment facilities. The staff-to-client ratio was not a significant (univariate) predictor of retention and was therefore not included in the multilevel analyses.

3.2.3. Professional development: clinical supervision and training

No studies were identified that focussed on the effect of clinical supervision and one study was found that examined the effect of training on client treatment outcomes. Methodological quality of the latter was moderate (Schulte et al., 2010). Schulte and colleagues examined the relationship between staff training and 90-day retention rates of dual diagnoses clients in outpatient addiction treatment. This study found non-significant results.

3.3. Summary

In total 20 findings were found across the 12 studies, as some studies examined multiple clinician and organisational

characteristics, and/or reported mixed results. The studies examining clinician characteristics - years of experience and level of education – identified no clear unidirectional relationship for either more experienced (three positive, three non-significant and one negative relationship) or higher qualified (one positive, one negative and two non-significant associations) staff and treatment outcomes. Instead, the individual clinician characteristics appeared to be dependent on the type of clients being treated and the type of treatment being provided. The same applied for the organisational characteristics with the results also being influenced by the specific outcome being examined. The findings for turnover (two non-significant and one negative) and staff-to-client ratios (three non-significant and two positive relationships) were found to be mixed. Finally, the single study of professional development (that only examined training) found a non-significant result. The findings need to be interpreted with care as most studies were of low (42%) or moderate (25%) methodological quality, with only 33% being of high quality.

4. Discussion

This paper provides an analysis of the empirical literature on the effects of clinician and organisational workforce characteristics on AOD client outcomes. Our aim was to synthesise the available (but fragmented) evidence and to structure the results according to five substantive clinician and organisational workforce characteristics. Very few studies have examined the association between workforce characteristics and client treatment outcomes. Of the 61 full-text studies that were assessed for eligibility in the present review we often encountered claims that certain workforce characteristics influenced AOD treatment outcomes, but no empirical evidence was provided. Of course, there are innumerable studies of client outcomes (Brener, von Hippel, von Hippel, Resnick, & Treloar, 2010; Carroll et al., 2006; Galanter, Keller, & Dermatis, 1997; Ritter et al., 2002) with no data collection, measurement and/or analysis of workforce characteristics, or vice versa – articles that examined workforce characteristics and workforce issues in general (Boulton et al., 2014; Miller, Yahne, Moyers, Martinez, & Pirritano, 2004; Roche et al., 2004). As a result, only 12 studies (from the initial pool of 1317) were located which provided an empirical examination of the relationship between workforce characteristics and client outcomes. This, on its own, is an important finding and reveals a large gap in the literature.

The studies that do exist are highly varied in their methods and in methodological quality making it difficult to interpret and generalise the findings. Some studies (Hser et al., 2001; Woodward et al., 2006) used multi-level modelling and other advanced statistics to account for the hierarchical nature of the data. Other studies were poorly designed such as an absence of control groups and/or failure to collect rigorous workforce or treatment outcome measures (De Leon et al., 2000; Fiorentine & Anglin, 1997). In addition, there were differences in how the workforce variables were operationalised and measured. Perhaps, therefore, it is not surprising that the findings are inconsistent at best and often

contradictory and not necessarily in the expected directions. Indeed, this review shows that there is no evidence that can be established of a clear unidirectional relationship between workforce characteristics and client treatment outcomes. Take for example level of education, with findings in all three directions (positive, negative and no relationship) with all three studies using a multi-variate analysis and being of high quality.

Results of the few studies with strong designs are mixed, justifying the conclusion that there is insufficient evidence to determine to what extent clinician and organisational characteristics impact client outcomes. Importantly, these high-quality studies showed that the impact of workforce characteristics on treatment outcome may be dependent on (1) the type of AOD clients being treated; (2) the type of treatment being provided, and; (3) the client outcomes being examined. In relation to the type of client, Woodward et al. (2006) illustrate that the level of education of counsellors may matter depending on the age of clients, with a greater impact for younger aged clients. When looking at the type of treatment, Hser et al. (2001) showed that staff members with a lower caseload significantly impacted clients' time in treatment for residential programmes, but this did not apply for drug-free programmes and methadone maintenance programmes. Or take Project MATCH Research Group (1998) where therapist education and years of experience predicted very little variance in outcomes for cognitive–behavioural skills training and motivational enhancement therapy outcomes and were negatively related to 12-step facilitation client outcomes. The nature of the client, their history and severity of problems, type of drug(s) involved, and the treatment type may therefore have substantial impacts on any or all of the relationships and outcomes examined.

The limited number of studies on the relationship between workforce characteristics and client treatment outcomes highlights a major deficit in our evidence base. Beyond the simple paucity of research, in most studies the potential interactions and compounding effects across different workforce characteristics were not addressed; an example is the study by Miller et al. (1980), which did not account for the interactions between training and years of experience, or the study by Schulte et al. (2010) which did not take the intensity of the training into account. It is also plausible that workforce characteristics per se do not directly impact on treatment outcomes, but rather is a result of the interaction of combination of factors. Some work has been undertaken on 'intervening variables', particularly burnout (Knudsen, Roman, & Abraham, 2013; Oser, Biebel, Pullen, & Harp, 2013), workers' wellbeing (Nicholas, Duraisingam, Roche, Hodge, & Braye, 2017), and the overall work environment (Landrum et al., 2012; Moos & Moos, 1998). It could be that some of the clinician and organisational characteristics examined here may act as mediators in improved treatment outcomes but not operate directly onto treatment outcome. For example, it could be that a negative work environment, resulting in stress and burnout could lead to higher turnover rates, which in turn could increase the workload of remaining staff, which may mean less quality time per clients, ultimately leading to negative treatment outcomes. In this case, turnover rates do

not have a direct effect on a client's AOD use outcomes, rather turnover is linked to a number of intervening factors which themselves have an impact on the outcomes of the client. While many studies in this field report on intervening variables – that is between clinician and organisational workforce characteristics, none have analysed the relationship between these variables and client outcomes.

Another example is the therapeutic relationship, an important variable in AOD treatment (Elliott, Bohart, Watson, & Murphy, 2018). Treatment quality can suffer significantly if clients are not able to form long-term relationships and commitments with their therapists. Staff leaving (i.e. turnover) impacts this relationship as (1) clients are assigned to a new therapist, and (2) the therapeutic relationship can be impacted by the resultant higher workload on remaining staff, and a potentially low morale workplace. This example highlights the importance of understanding various causal pathways and intervening variables.

Much greater clarity regarding the theoretical relationships between workforce and treatment outcome, including intervening and confounding variables, is needed. Indeed, in contrast to the dominant discourse (i.e. lower levels of education and years of experience, higher staff turnover, a higher workload, and poor clinical supervision and training, lead to negative outcomes), this analysis illustrates that there does not seem to be a simple one-to-one relationship. Instead client outcomes are likely influenced by a multitude of workforce and other related factors. As such, simplistic bi-variate comparisons are unlikely to yield useful findings given the complexity of the interactions and dynamics between clinician and organisational workforce characteristics, work environment, client characteristics and treatment outcomes. Indeed, more sophisticated study designs and analyses are required.

4.1. Limitations

Despite an extensive endeavour to locate all relevant published journal articles, the application of extensive search strategies, and a large pool of papers, some studies may have been missed. This is especially the case where clinician and organisational variables may not have been the main subject of study but an aside within the results section of a paper. Another limitation is the exclusion of clinician well-being and work environment. This was deliberate in order to ensure a manageable systematic review but may have restricted the results. A separate review of the extant literature in this area is recommended.

5. Conclusions

This review provides the first synthesised effort to examine clinician and organisational characteristics, and their relationship to client treatment outcomes in AOD settings. The current state of research in this area is limited, making it difficult to draw any firm conclusions regarding the impact of workforce characteristics on AOD treatment outcomes. There are various limitations in the evidence base due to the small numbers of studies conducted and the numerous design and methodological issues. The present findings are important in helping to advance research in this area and provide a useful starting point for future studies. Importantly, it illustrates that higher quality and larger scale research that focuses on clinician and organisational characteristics, and taking into account multiple intervening variables, are needed to guide developments in this field. Expanding our knowledge in this area may not only improve the AOD workforce but more importantly the quality and effectiveness of AOD treatment.

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