A Narrative Review of the Recent 'Ice' Epidemic: An Australian Perspective

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ABSTRACT

BACKGROUND: The use of methamphetamine or amphetamine stimulant drugs has been identified by authoritative public health bodies as a global health issue, with a worrying trend towards production and consumption of a higher purity crystalline form methamphetamine (ice) over the past decade. This trend has been well documented within Australia, resulting in a public perception of there being an 'ice' epidemic in regional/rural areas. Considering the illicit nature of ice, monitoring it is challenging and as such little information is available regarding the actual extent of methamphetamine use, harms and patterns in regional/remote Australia.

AIM: To collate the available literature regarding methamphetamine use in regional/rural Australia and identify gaps in the literature.

METHODS: A literature search was conducted by searching 6 databases (PUBMED, Medline, CINAHL, EMBASE, PsycINFO and SCOPUS) following which exclusion/inclusion criteria were applied. Included papers were appraised with the Joanna Briggs Institute Critical appraisal tools and synthesised in light of the sociocultural, ethnic and geographic differences in methamphetamine use in Australia.

RESULTS: Regarding rural/regional Australia there is a significant lack of research into methamphetamine use, patterns and epidemiology since the rise of crystalline methamphetamine in 2013. The existing literature available suggests great variability in methamphetamine harms in rural communities. This can be a double-edged sword however, as the introduction of ice into a remote/rural community may result in greater harms if it becomes ingrained in local customs. Similarly, there is a lack of research into the specific factors within Indigenous communities leading to an increased rate of methamphetamine use amongst members.

RECOMMENDATION: Future research should address the causes of variance in methamphetamine harms in rural/remote regions. Although the scope of this paper was the Australian context, a wider international approach may yield useful information.

KEYWORDS: Australia, methamphetamine, stimulant, rural, remote, Indigenous, epidemiology, ice, crystal, review

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Background

Methamphetamine use globally

The use of methamphetamine or amphetamine stimulant drugs has been identified by authoritative public health bodies as a global health issue with a 2018 global past-year prevalence of around 27 million users with some historical ceiling estimates from 2014 suggesting that over 50 million people globally used.[1-3] In addition, the production and distribution of methamphetamine has been on an increase over the past decade as indicated by an increased number of seizures and waste analysis methods.[4] Considering that dependence on stimulants is associated with a 37% increase in disability adjusted life years (DALYs) and is second only to opioids globally, this is a significant concern – especially if there is an apparent upward trend in use/production.[5,6] The harms associated with systematic methamphetamine use include a range of psychiatric disorders such as Mood, Anxiety, Substance use and Psychotic disorders, a range of medical issues including organ failure as well as increased risky behaviour ranging from criminality to injecting/sexual risky behaviour.[5,6]

According to the 2015 World Drug Report, methamphetamine consumption rose in almost all world regions, particularly in Asian/Southeast Asian countries with a similar trend observed in the 2020 World Drug Report.[2,3,7] This was largely due to the shift in the manufacturing of methamphetamine – in particular the highly potent crystalline form around 2013.[8] This form of methamphetamine increases the risk of overdose given it's purity and higher bioavailability when compared to less potent form such as pills and powders (which are both initially hepatically metabolised) which frequently are mixed with other components (informally referred to as 'cutting the product') to increase the market utility of the product for manufacturers/dealers in order to maximise profits.[9] This can be incredibly dangerous considering the interaction effects of various drugs in addition to the unknown effect of other ingredients used with methamphetamine.

The nature of substance misuse as a pathology can be seen as a complex issue with no one philosophy of illness accounting fully for the pathological aetiology. Specifically the way substances are portrayed, used and integrated into cultures

and even subcultures makes the relationship of people with specific drugs a dynamic one likely to be influenced by factors outside of purely bio-psychological factors.[7-9] It is useful to look at the broader global and international picture, as the trends seen cross-culturally may very well be applicable to the Australian context too, however a full analysis of this is beyond the scope of this paper. For this reason this narrative review will delve into the relationship which has developed over time between Australians and methamphetamines in particular.

The Australian context

Within Australia, there have been well documented disparities in health outcomes between those living in Urban centres as opposed to Regional/Remote Australia.[10,11] According to the Australian Institute of Health and Welfare (AIHW), Australians living in rural/remote areas were more likely to have higher levels of alcohol and tobacco use, increased total disease burden compared to urban areas, decreased health access opportunities and employment as well as higher levels of preventable disease and injury in general.[7,10,11] Despite these trends, Australians living outside of major cities reported experiencing higher life satisfaction and communal integration.[12] This is not surprising considering that according to the social determinants of health approach to public health poorer social/economic conditions have a downstream negative effect on healthcare at both a system and individual level. With regards to substance misuse AIHW have done extensive research regarding alcohol and tobacco use, however the use of methamphetamine specifically has not been as formally investigated or reported between rural/regional and metro Australia at a national level as it very frequently gets pooled together with all stimulant drugs.[9-11]

Of specific interest as a subgroup of regional/remote Australia are Indigenous Australians, considering they proportionally make up a larger part of these populations than non-indigenous Australians with upwards of 60% living outside of major cities.[13] As such, any analysis of differences between Metro/Non-Metro Australia will likely encounter intersectional effects from issues and experiences faced by Indigenous Australians. With regards to health outcomes, the issues specific to Indigenous Australians compared to non-Indigenous include increased incidence of mental illness/suicidality, hospitalisation from respiratory diseases, incidence and hospitalisation from cardiovascular diseases, increased likelihood of diabetes and associated complications, incidence of chronic kidney disease, higher likelihood injury/poisoning as well as increased incidence of substance misuse.[13] These shocking outcomes have been well documented throughout the literature, however much like with the rural/metro comparison outcomes, quite little is reported on specific illicit substance use – with prevention/treatment strategies contingent upon identifying the issue. According to the AIHW. This narrative review as such will attempt to piece together the information available about methamphetamine use and harms between (a) Rural/remote Australia and Metro Australia and (b) Indigenous Australians and Non-Indigenous Australians.

Methods

Search strategy

A literature search was conducted by searching 6 databases (PUBMED, Medline, CINAHL, EMBASE, PsycINFO and SCOPUS) which were searched on 27th September 2020 using key words and Boolean operators (Appendix 1) as adapted for research domains (a) and (b) above. Additional Grey literature was found through snowball sampling the citations list obtained from consultation with Professor Alan Clough of James Cook University and the AIHW materials which allowed for further 'territory mapping' of the scope of the review.[14]

Inclusion/exclusion criteria

Considering the limited literature available on Methamphetamine use in both rural/regional Australia and Indigenous Australians, all literature related to describing the epidemiology, harms or sociocultural impact of methamphetamine use across these populations was included. Exclusion criteria included no relevance to either Rural/Remote Australia or Indigenous Australians.

Extraction/analysis

Following the application of exclusion criteria to the search results and obtaining the final pool of eligible literature for each research domain, critical appraisal took place in order to ensure the literature was both appropriately scoped to the Australian/Indigenous nature of this review in addition to the quality of the individual studies/research found. Quality was assessed using the Joanna Briggs Institute Critical appraisal tools as a framework which was used for both excluding low quality research and comparing evidence that was ultimately included in this review.[15] Following data extraction, thematic codes were analysed and synthesised in light of the sociocultural, ethnic and geographic differences in methamphetamine use in Australia. These descriptive trends were noted for both research domains (a) and (b) while mapping the current body of knowledge, revealing the possible scope for future investigation.

Results

Since crystalline methamphetamine became the preferred form in Australia, there has been a significant lack of research into the social costs/harms of it, however Tait et al[6]

illustrates a significant cost to Australia's economy equivalent to somewhere in the range of $2.5 to $7 billion. In order to break down these costs 8 broad areas were identified including: (i) Criminal Justice; (ii) Premature mortality; (iii) Workplace costs; (iv) Health care; (v) Child protection and maltreatment; (vi) Road Crashes; (vii) Prevention and harm reduction; and (viii) Clandestine laboratories.[6] The Tait factors of social harms are a useful model to frame analysis against, as the modelling of socioeconomic harms is less common than that of physical/psychiatric harms from illicit drugs.[16] Considering the significant effect environment has on substance misuse however, this should not be avoided. Other attempts at quantifying the harms of methamphetamine in Australia have been attempted such as in Bonomo et al[17] where Multi-criteria Decision Analysis was used to demonstrate that Ice was the most harmful illicit drug when considering harm to self and others cumulatively.

Methamphetamine use in rural/regional versus metro Australia

Considering the illicit nature of methamphetamine use, measuring the actual epidemiology of use and associated harms is markedly more difficult than that of well regulated/monitored substances such as tobacco and alcohol.[6,18-20] As such, there appears to be a significant lack of research into these uses within the Australian context with a search of major databases only yielding under 30 results (Appendix 1). The literature demonstrates that the main methods of measuring methamphetamine use include criminal justice data (including seizures and laboratory busts), waste analysis, self-reported surveys/interviews and hospital/clinic presentations.[7] The lack of quality systematic reviews of the Australian methamphetamine problem particularly since the rise of the higher purity crystalline form since 2013/2014 makes authoritative grey literature and other study types of particular importance regarding informing this narrative review. This lack of data was outlined by Degenhardt et al[16] who used the National Drug Strategy Household Survey (NDSHS)[21] data as well as various data on drug seizures and national drug reporting system to illustrate the apparent rise in purity of methamphetamine since 2013 as well as a marked drop in 20 to 29 year-old usage of the drug. This drop in usage amongst 20 to 29 year-olds is contrasted by an increase in reported methamphetamine use in those over the age of 40 – suggesting that shifting stigmas surrounding methamphetamine use likely influences survey responses and should be further analysed.[16,21]

The aforementioned findings are consistent with those found in Roche and McEntee[10] through NDSHS and related national data-set analysis who found a significantly higher level of methamphetamine use in rural locations than those in non-rural locations. This is a concerning observation considering just the year prior, Clough et al[12] in their discussion paper identified that although ice was present in very remote Australia in Far-North Queensland, use was largely opportunistic, whereas established culture of use was found more sporadically in outer-regional regions. This is of importance as remote Australia have high socioeconomic disadvantage as well as geographical isolation – such that the introduction of a destructive substance such as ice into these communities would function as a petri-dish of downstream harmful outcomes.[12,22] This same geographic isolation can be protective as there is less chance of an introduction of methamphetamine which was demonstrated in an analysis conducted by Ward et al[23] regarding methamphetamine use in the Murray Primary Health Network. Interestingly, large variance was demonstrated among rural/remote Victorian locations suggesting that the application of blanket statements about methamphetamine use trends in rural/remote Australia may be premature given the current level of data available.[23]

Interestingly, there appears to be a large media influence on the perception of rural Australia and ice use as outlined by Waller and Clifford[24] where the actual extent of methamphetamine use in rural towns may not be reflected accurately. Based on these presentations of rurality and the sociocultural expectations places on rural living, this may project expectations of how these towns as well as the government should deal with the very complex problem of ice use.[24] As outlined by Cartwright and Tait through an analysis of 2 remote towns in Australia, the lived experiences and perceptions of people from these towns is not congruent with the magnitude of the 'ice epidemic' portrayed by media, and rather substances such as alcohol are of greater concern to locals.[25] It is important to consider the media portrayals of such issues in light with the locals of these communities, as largely the latter can be lost as an audience to policy drafters and decision makers.

Methamphetamine use in Indigenous versus Non-Indigenous Australians

Since the sharp rise in crystal methamphetamine in Australian society since roughly 2013, disproportionately high levels of harm have been identified in indigenous communities especially through national Surveys.[26] National surveys targeting the social, behavioural and health data of Indigenous Australians are quite novel with the 2 GOANNA surveys funded by the Australian Government – taking place in the periods 2011 to 2013 and 2017 to 2020 respectively – being the largest and most authoritative ones to date in Australia.[26-28] The patterns noticed in the indigenous communities do not seem to fully reflect those aforementioned in regional/urban areas with no apparent difference in use depending on rurality.[21,26] Worryingly however, the incidence of indigenous methamphetamine use is roughly twice that of non-indigenous.[21,29] Reilly et al[29] have analysed this disparity through their own targeted survey to

existing methamphetamine users and found no significant differences in methamphetamine use patterns depending on indigenous status, however found significantly higher levels of psychological distress in indigenous compared to non-indigenous populations. As identified by Clough et al[12] in addition to remoteness, strong community actions and community-level fears were protective factors against methamphetamine harms, however little research currently exists regarding the indigenous community's protective or risk factors regarding methamphetamine.

Identified gaps in the literature

1. Little is known about the specific factors leading to increased variance and incidence of methamphetamine use in rural/remote Australia.
2. There is a lack of research into the specific factors within Indigenous communities leading to an increased rate of methamphetamine use amongst members.

Proposed future research

Based on the identified gaps in the literature, the proposed research question concerning specific community and individual risk factors for methamphetamine use in both remote and indigenous communities is:

> 'What does the evidence base tell us about the causes of variance in methamphetamine harms in rural/remote regions?'

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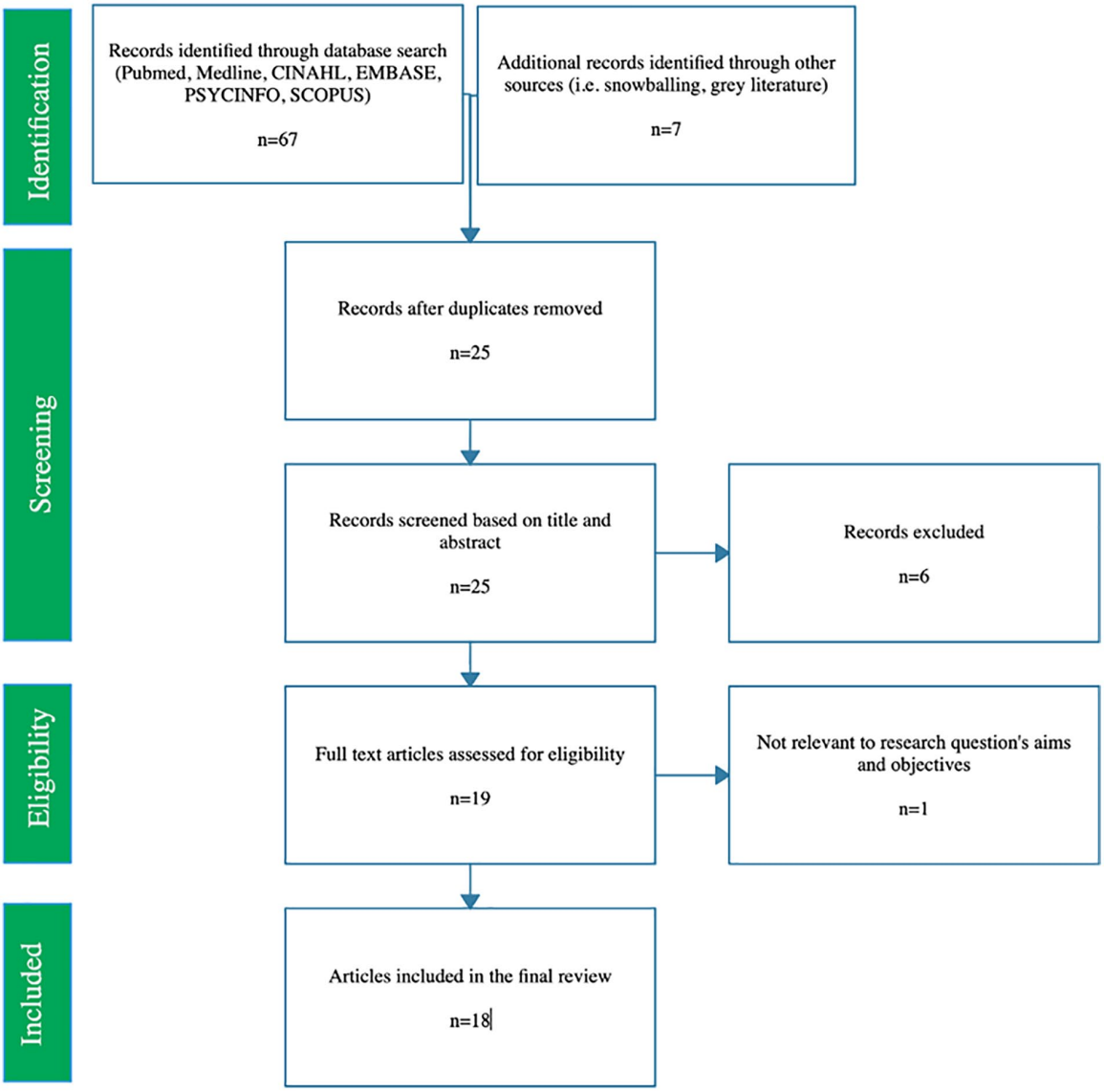
Appendix 1

Both Research Domain (a) and (b) searches were performed on 27th September 2020.

Objective 1 Searches

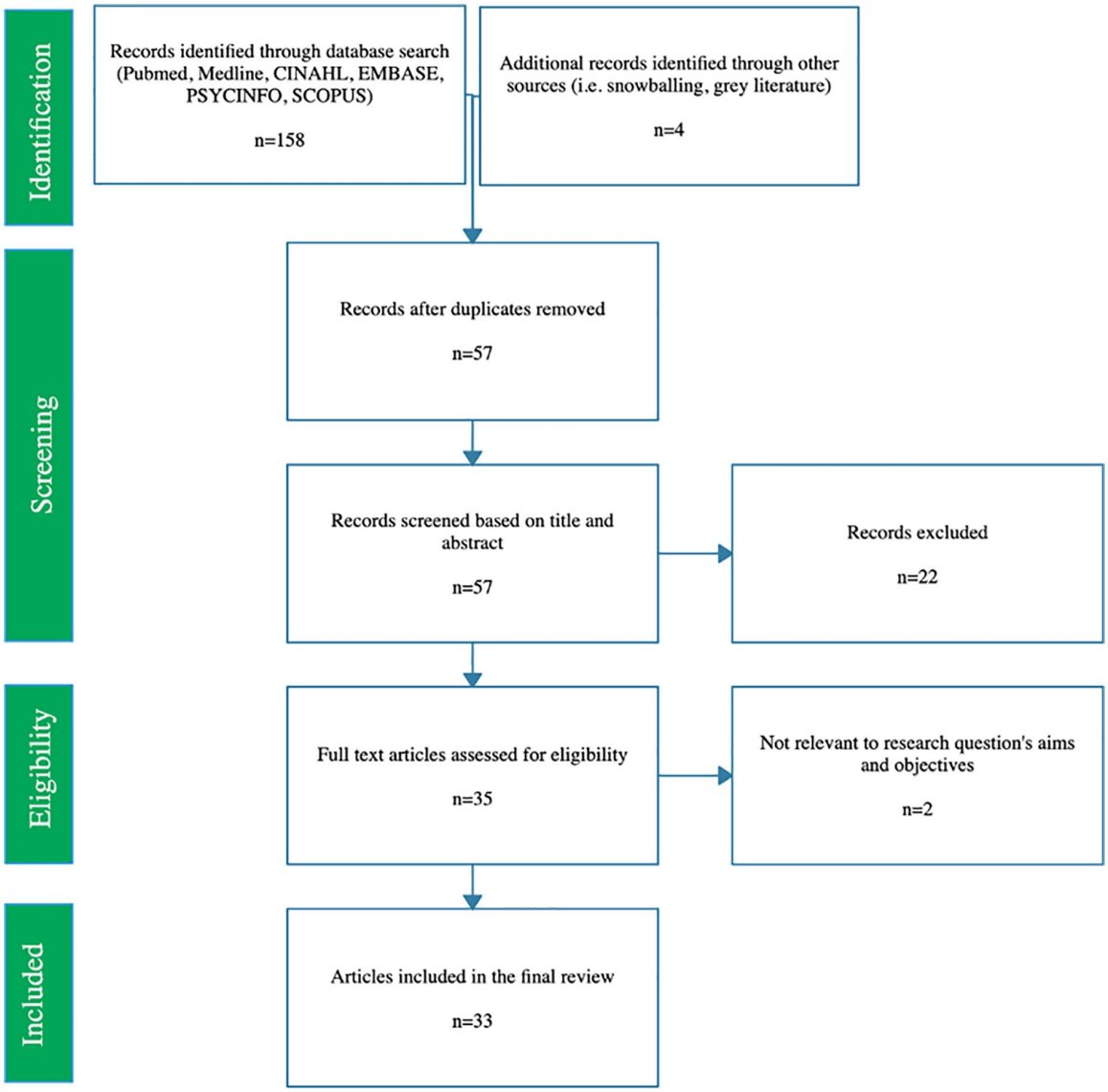
DATABASE	SEARCH NUMBER	SEARCH STRATEGY	ITEMS FOUND
PUBMED	1	AUSTRALIA AND METHAMPHETAMINE AND (RURAL OR REMOTE OR REGIONAL) AND (METRO OR URBAN)	28
EBSCOhost Medline	1	AUSTRALIA AND METHAMPHETAMINE AND (RURAL OR REMOTE OR REGIONAL) AND (METRO OR URBAN)	10
EBSCOhost CINAHL	1	AUSTRALIA AND METHAMPHETAMINE AND (RURAL OR REMOTE OR REGIONAL) AND (METRO OR URBAN)	5
EMBASE	1	AUSTRALIA AND METHAMPHETAMINE AND (RURAL OR REMOTE OR REGIONAL) AND (METRO OR URBAN)	12
PSYCINFO	1	AUSTRALIA AND METHAMPHETAMINE AND (RURAL OR REMOTE OR REGIONAL) AND (METRO OR URBAN)	2
SCOPUS	1	AUSTRALIA AND METHAMPHETAMINE AND (RURAL OR REMOTE OR REGIONAL) AND (METRO OR URBAN)	10



Prisma flowchart for objective 1.

Objective 2 searches

DATABASE	SEARCH NUMBER	SEARCH STRATEGY	ITEMS FOUND
PUBMED	1	AUSTRALIA AND (METHAMPHETAMINE OR ICE) AND (INDIGENOUS OR ABORIGINAL)	18
EBSCOhost Medline	1	AUSTRALIA AND (METHAMPHETAMINE OR ICE) AND (INDIGENOUS OR ABORIGINAL)	27
EBSCOhost CINAHL	1	AUSTRALIA AND (METHAMPHETAMINE OR ICE) AND (INDIGENOUS OR ABORIGINAL)	10
EMBASE	1	AUSTRALIA AND (METHAMPHETAMINE OR ICE) AND (INDIGENOUS OR ABORIGINAL)	46
PSYCINFO	1	AUSTRALIA AND (METHAMPHETAMINE OR ICE) AND (INDIGENOUS OR ABORIGINAL)	15
SCOPUS	1	AUSTRALIA AND (METHAMPHETAMINE OR ICE) AND (INDIGENOUS OR ABORIGINAL)	42



PRISMA flowchart for objective 2.