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# LIST OF ABBREVIATIONS

**ABAC**: Alcohol Beverages Advertising Code

**ABS**: Australian Bureau of Statistics

**AIC**: Akaike information criterion

**AIHW**: Australian Institute of Health and Welfare

**AIDS**: Acquired immunodeficiency syndrome

**ALCAP**: Alcohol Ad Capture Portal

**ANOVA**: Analysis of variance

**AOD**: Alcohol and other drugs

**BIC**: Bayesian information criterion

**Covid-19**: Coronavirus disease of 2019

**CI**: Confidence interval

**EMA**: Ecological momentary assessment

**GABA**: Gamma-aminobutyric acid

**GP**: General Practitioner

**HIV**: Human Immunodeficiency virus

**ICC**: Inter-class correlation

**IoEO**: Index of Education and Occupation

**IoED**: Index of proportion of people in unskilled jobs or low level of educational qualifications

**IRSD**: Index of Socio-economic disadvantage

**ISA**: Ideological State Apparatus

**JBI**: Joanna Briggs Institute

**JT**: Jessica Thomas

**OECD**: Organisation for Economic Co-operation and Development

**Mdn**: Median

**MPH**: Master of Public Health

**NHMRC**: National Health and Medical Research Council

**NIAAA**: National Institute on Alcohol Abuse and Alcoholism

**PAR**: Participatory action research

**PhD**: Doctor of Philosophy

**RCT**: Randomised Control Trial

**RSA**: Repressive State Apparatus

**SA**: South Australia

**SBREC**: Social and Behavioural Research Ethics Committee

**SD**: Standard deviation

**SE**: Standard error

**SEIFA**: Socioeconomic Index for Areas

**SOC**: Significant and original contribution

**SPHERE**: Social media and Public Health Epidemic and Response

**SPSS**: Statistical Package for Social Science

**TBI**: Traumatic brain injury

**UK**: United Kingdom

**US**: United States of America

**WA**: Western Australia

**WHO**: World Health Organisation

# DEDICATION

I dedicate this work to three wonderful women, Jacqui Kosch, Ruth Murchland, and Helen Maxwell who sadly all passed away from breast cancer during this research. All research needs a powerful why. Thank you for being mine.

# PROLOGUE

On a warm Sunday morning, I stood in the pub carpark surrounded by women clad in a kaleidoscope of lycra. The run leader described the trails we were about to run. Then, a shocking display occurred. A shirt was lifted, and breasts were revealed. Instead of the sensual curves of mammary glands, a flat mutilated chest of where breasts used to be was revealed. Scars with angry jagged lines. This absence and confronting display hit me hard. The shocking visual was accompanied by the strong message of – 'get your boobs checked.' This was the first time I realised that our run group leader had been battling breast cancer. I was filled with questions. Whilst screening is important why are we only talking about secondary prevention? Why are we not talking about primary prevention and alcohol? Surely prevention is better than cure?

I remained respectfully quiet as the moment was not one which invited questions. It was a moment of a survivor trying to turn a traumatic experience into something positive. There was something shocking and sacred being shared here between women. A strong, mutilated woman trying to save others from the same fate. What was normally a private, intimate moment was thrust into the light of day. The quiet things were being said out loud. Whilst I admired the strength and was inspired by the genuine motivations of this woman, I wished the conversation was different. She believed that the answer laid within the power of medicine. That finding breast cancer early enough was the solution. The message of 'get your boobs checked', places the power within the hands of others. It places the power within the medical paradigm and positions screening as prevention.

Several months later, I came to better understand why drinking was so difficult to talk about in the context of breast cancer. I sought feedback from a group of positive, strong women on how to best communicate the research. This feedback made me realise just how difficult having conversations in this space of alcohol and breast cancer could be. Breast cancer is a highly relatable topic for many women, most have lost loved ones, or had their lives impacted by the condition. Discussions with high emotion combined with the taboo the topic of women's drinking were unpalatable, and quickly dismissed. The combination of the powerful emotive topic of breast cancer combined with alcohol as a behavioural risk factor for breast cancer was not an easily communicated message. As public health researchers we cannot assume that we know what is best for populations. Whilst we could all agree that

less women having breast cancer was a good thing. How to find common ground, an acceptable way to get there was the challenge. Less alcohol means less breast cancer according to the literature. A dose-response relationship between alcohol and breast cancer risk exists, the more alcohol that is consumed, the higher the increase in breast cancer risk. There is no safe level of drinking. Every drink increases risk. But many women did not buy this 1+1=2 logic. In fact, they found it downright offensive. Put more colloquially, saving boobs was ok to talk about but alcohol was not.

I met two women during this doctoral journey who had a profound impact on me and on the research. I met Helen and Ruth through social circles, and they were both diagnosed, treated, went into remission, relapsed and passed away during my candidature. Meeting these remarkable women and discussing the research in a social setting opened my eyes to different ways of thinking. Their lived experience of breast cancer exposed me to the harsh realities of the perceptions around prevention of this soul destroying condition. Sadly, both of these amazing women died long before their time due to breast cancer. I have born witness to their suffering, their moments of celebration with remission and the relapse of the disease. Both of their deaths dropped me into a spiralling vortex. A crushing blow where I felt the incredible weight of why this research is important.

I honour these amazing women by opening up more conversations about this difficult topic. By understanding how perceptions are formed around alcohol and the function alcohol serves for women. This knowledge can assist with bridging the gap between evidence and acceptability. This thesis provides evidence of how future research can be translated into health outcomes. This research creates meaningfully ways to engage with women on alcohol and breast cancer, and together we can reduce breast cancer risk.

It is within this context the thesis emerges.

# CHAPTER 1 Introduction

## 1.1 BACKGROUND

Breast cancer is a phrase that summons fear. I have lost family members and seen people I care about go through traumatic and difficult journeys due to this disease. I share my story to explain why this thesis emerged, and why I am the person to do the research. The second half of this PhD was completed while undertaking a medical degree. This provides me with a unique perspective, a foot in two worlds of the contrasting disciplines of medicine and public health. In both worlds the biomedical paradigm dominates, promoting an individualist behavioural narrative. When public health researchers understand the causes of behaviours, the iceberg below the surface, more effective prevention strategies can be configured beyond the superficial approaches of telling women to abstain from alcohol and promoting screening.

Biomedical approaches to breast cancer prevention treat women as the appendages attached to breasts. The focus is on the mammary glands, the feminine piece of fatty tissue. By working together and particularly through democratizing science, health professionals, policy makers and citizens can find solutions to complement breast cancer screening, and to embrace primary prevention.

My own professional and personal journey to research has been long and meandering. Reflecting on it allows me to understand the frame of reference I bring to the complex issue of women’s drinking and breast cancer risk. Previously research felt elitist and exclusive, a field outside of my reach. This in part, explains my appreciation for participatory research. The democratisation of science is an issue I care deeply about, as I was one of those people who felt excluded. Research used to feel like a door that was only open to those who had the highest grades. Those in the inner circle, close to academics who would suggest and steer them in the research direction. I came from a rural community and was the first in my family to go the university. Education was always seen as important. However, the purpose of education was to provide options in terms of employment. University was seen as vocational training ground, to gain a degree to land a ‘good’ job. With this lens as an undergraduate, the grades I achieved did not matter, as long as I passed and got through the degree. Hence, I never became part of the inner circle. Research was seen as something out of reach.

What I was interested in, and expressed an aptitude for, was health promotion and working with communities. After working for several years in remote areas with the Royal Flying Doctor Service, I began to consider pursuing postgraduate study. Given my interests for community-based action and health, I decided on a Master of Public Health. I enjoyed this role and the MPH; it helped me to understand the divide between what we know is needed for good health, and the complexities of why people do what they do. I saw firsthand the burden of ongoing colonisation, chronic disease, depression and poverty. I wanted to understand more so that I could work towards positive change.

If we want to understand the behaviour of others, understanding ourselves is a strong starting point. I almost did not get here, into a PhD program. Before I started my master's degree, I had not attended a university for over a decade, I was a little rusty on the study skills. I needed to support myself and work full time while studying. Given these circumstances, whilst I was interested in research, I did not feel that the master's by research was practical, or even possible for me. However, I volunteered on research projects and then secured a role undertaking health promotion in a research institute. I put myself in a position where I received more research exposure. This allowed me to meet other researchers. I started to feel like it was possible for me to be a researcher. This long and meandering journey served a purpose. The journey allowed me to develop the skills to strongly engage with stakeholders and a commitment to participatory research which embraced 'working with' impacted populations.

Whilst I previously felt like an intruder in research spaces, I am committed to increasing diversity in the voices that inform breast cancer prevention. My public health background heightens my passion to address the causes, rather than the symptoms of the issue. For effective prevention of alcohol related breast cancer, we must respond to the cause of the problem, *why* women are drinking more.

## 1.2 CONTEXT

Alcohol is a Group-1 carcinogen and a modifiable breast cancer risk factor (Winstanley et al., 2011a). Women drinking heavily have a 60% excess risk for breast cancer relative to non-drinkers (Bagnardi et al., 2015). Heavy drinking is defined as 450 grams of alcohol per day (45 standard drinks, around 1 bottle of spirits). Therefore, finding ways to reduce alcohol intake, on a population scale, could reduce breast cancer incidence.

### 122 1.2.1 Alcohol, gender and social and cultural environments

123 Australia is amongst the top ten countries for alcohol consumption, and the heaviest
124 drinking English-speaking country (WHO, 2015). The regular consumption of alcohol is a
125 social norm in Australia, however the World Health Organization (p.10) state that “the
126 vulnerability of females to alcohol related harm is a major public health concern”, and alcohol
127 consumption is structurally patterned by gender. Historically men have consumed more
128 alcohol than women however the gap is closing (Ruiz & Oscar-Berman, 2013). A systematic
129 review found that women, (born after 1981), are drinking at higher rates and in more harmful
130 ways than their male counterparts (Slade et al., 2016). In addition to gender differences, the
131 age is important. In Australia, young women’s drinking has reduced recently whilst women
132 in their 30s and 40s consumption has increased, indicating unique drivers for consumption
133 of alcohol in this life phase (Keyes et al., 2019; M. Miller, Mojica-Perez, et al., 2022).

**134 Deaths of despair: How do deaths and despair manifest in Australia**

135 Preventable mortality termed death of despair increased more rapidly in Australian
136 women than men in the previous decade. Why? Long, slow, self-induced deaths from
137 alcoholic liver disease, suicide and drug use have been termed deaths of despair by Case
138 and Deaton (Case & Deaton, 2015). Despite improvements in healthcare and reductions in
139 cardiovascular and cancer mortality, in the United States, deaths of despair have contributed
140 to an increase in overall mortality. These potentially avoidable deaths have been driven by
141 a particular population group, white, non-Hispanic, middle aged, working class men with
142 lower education levels (Case & Deaton, 2015). When assessing the Australian context, an
143 alarming, gendered trend is present with women dying in their prime from avoidable deaths.
144 Australia experienced the third highest increase when compared to 14 other wealthy
145 countries of deaths of despair where all-cause mortality for those aged 50-54 has decreased
146 by 1% from 1999 to 2015, however deaths of despair increased by 2.5% annually
147 (Bastiampillai et al., 2021). While the increase in mortality from deaths of despair have been
148 greatest in the United States, the rise in avoidable deaths serves as a hypothesis and
149 framework to understand and test in Australia, to consider if there are specific national
150 connotations and manifestations.

151 Alcohol is a culturally sanctioned de-stressor for managing the multiple gendered roles
152 that women perform. Women report, "like most people my age, my Facebook feed is quite
153 cheerfully full of wine memes, and we are sold this image that after a day coping with children
154 and coping with work, and coping with those incessant demands, that we deserve a drink of

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**NIAAA**: National Institute on Alcohol Abuse and Alcoholism

**PAR**: Participatory action research

**PhD**: Doctor of Philosophy

**RCT**: Randomised Control Trial

**RSA**: Repressive State Apparatus

**SA**: South Australia

**SBREC**: Social and Behavioural Research Ethics Committee

**SD**: Standard deviation

**SE**: Standard error

**SEIFA**: Socioeconomic Index for Areas

**SOC**: Significant and original contribution

**SPHERE**: Social media and Public Health Epidemic and Response

**SPSS**: Statistical Package for Social Science

**TBI**: Traumatic brain injury

**UK**: United Kingdom

**US**: United States of America

**WA**: Western Australia

**WHO**: World Health Organisation

# DEDICATION

I dedicate this work to three wonderful women, Jacqui Kosch, Ruth Murchland, and Helen Maxwell who sadly all passed away from breast cancer during this research. All research needs a powerful why.  Thank you for being mine.

# PROLOGUE

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49 I honour these amazing women by opening up more conversations about this difficult
50 topic. By understanding how perceptions are formed around alcohol and the function alcohol
51 serves for women. This knowledge can assist with bridging the gap between evidence and
52 acceptability. This thesis provides evidence of how future research can be translated into
53 health outcomes. This research creates meaningfully ways to engage with women on
54 alcohol and breast cancer, and together we can reduce breast cancer risk.

55 It is within this context the thesis emerges.

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58

# CHAPTER 1 Introduction

## 1.1 BACKGROUND

Breast cancer is a phrase that summons fear. I have lost family members and seen people I care about go through traumatic and difficult journeys due to this disease. I share my story to explain why this thesis emerged, and why I am the person to do the research. The second half of this PhD was completed while undertaking a medical degree. This provides me with a unique perspective, a foot in two worlds of the contrasting disciplines of medicine and public health. In both worlds the biomedical paradigm dominates, promoting an individualist behavioural narrative. When public health researchers understand the causes of behaviours, the iceberg below the surface, more effective prevention strategies can be configured beyond the superficial approaches of telling women to abstain from alcohol and promoting screening.

Biomedical approaches to breast cancer prevention treat women as the appendages attached to breasts. The focus is on the mammary glands, the feminine piece of fatty tissue. By working together and particularly through democratizing science, health professionals, policy makers and citizens can find solutions to complement breast cancer screening, and to embrace primary prevention.

My own professional and personal journey to research has been long and meandering. Reflecting on it allows me to understand the frame of reference I bring to the complex issue of women's drinking and breast cancer risk. Previously research felt elitist and exclusive, a field outside of my reach. This in part, explains my appreciation for participatory research. The democratisation of science is an issue I care deeply about, as I was one of those people who felt excluded. Research used to feel like a door that was only open to those who had the highest grades. Those in the inner circle, close to academics who would suggest and steer them in the research direction. I came from a rural community and was the first in my family to go the university. Education was always seen as important. However, the purpose of education was to provide options in terms of employment. University was seen as vocational training ground, to gain a degree to land a 'good' job. With this lens as an undergraduate, the grades I achieved did not matter, as long as I passed and got through the degree. Hence, I never became part of the inner circle. Research was seen as something out of reach.

What I was interested in, and expressed an aptitude for, was health promotion and working with communities. After working for several years in remote areas with the Royal Flying Doctor Service, I began to consider pursuing postgraduate study. Given my interests for community-based action and health, I decided on a Master of Public Health. I enjoyed this role and the MPH; it helped me to understand the divide between what we know is needed for good health, and the complexities of why people do what they do. I saw firsthand the burden of ongoing colonisation, chronic disease, depression and poverty. I wanted to understand more so that I could work towards positive change.

If we want to understand the behaviour of others, understanding ourselves is a strong starting point. I almost did not get here, into a PhD program. Before I started my master's degree, I had not attended a university for over a decade, I was a little rusty on the study skills. I needed to support myself and work full time while studying. Given these circumstances, whilst I was interested in research, I did not feel that the master's by research was practical, or even possible for me. However, I volunteered on research projects and then secured a role undertaking health promotion in a research institute. I put myself in a position where I received more research exposure. This allowed me to meet other researchers. I started to feel like it was possible for me to be a researcher. This long and meandering journey served a purpose. The journey allowed me to develop the skills to strongly engage with stakeholders and a commitment to participatory research which embraced 'working with' impacted populations.

Whilst I previously felt like an intruder in research spaces, I am committed to increasing diversity in the voices that inform breast cancer prevention. My public health background heightens my passion to address the causes, rather than the symptoms of the issue. For effective prevention of alcohol related breast cancer, we must respond to the cause of the problem, *why* women are drinking more.

## 1.2 CONTEXT

Alcohol is a Group-1 carcinogen and a modifiable breast cancer risk factor (Winstanley et al., 2011a). Women drinking heavily have a 60% excess risk for breast cancer relative to non-drinkers (Bagnardi et al., 2015). Heavy drinking is defined as 450 grams of alcohol per day (45 standard drinks, around 1 bottle of spirits). Therefore, finding ways to reduce alcohol intake, on a population scale, could reduce breast cancer incidence.

### 1.2.1 Alcohol, gender and social and cultural environments

Australia is amongst the top ten countries for alcohol consumption, and the heaviest drinking English-speaking country (WHO, 2015). The regular consumption of alcohol is a social norm in Australia, however the World Health Organization (p.10) state that “the vulnerability of females to alcohol related harm is a major public health concern”, and alcohol consumption is structurally patterned by gender. Historically men have consumed more alcohol than women however the gap is closing (Ruiz & Oscar-Berman, 2013). A systematic review found that women, (born after 1981), are drinking at higher rates and in more harmful ways than their male counterparts (Slade et al., 2016). In addition to gender differences, the age is important. In Australia, young women’s drinking has reduced recently whilst women in their 30s and 40s consumption has increased, indicating unique drivers for consumption of alcohol in this life phase (Keyes et al., 2019; M. Miller, Mojica-Perez, et al., 2022).

**Deaths of despair: How do deaths and despair manifest in Australia**

Preventable mortality termed death of despair increased more rapidly in Australian women than men in the previous decade. Why? Long, slow, self-induced deaths from alcoholic liver disease, suicide and drug use have been termed deaths of despair by Case and Deaton (Case & Deaton, 2015). Despite improvements in healthcare and reductions in cardiovascular and cancer mortality, in the United States, deaths of despair have contributed to an increase in overall mortality. These potentially avoidable deaths have been driven by a particular population group, white, non-Hispanic, middle aged, working class men with lower education levels (Case & Deaton, 2015). When assessing the Australian context, an alarming, gendered trend is present with women dying in their prime from avoidable deaths. Australia experienced the third highest increase when compared to 14 other wealthy countries of deaths of despair where all-cause mortality for those aged 50-54 has decreased by 1% from 1999 to 2015, however deaths of despair increased by 2.5% annually (Bastiampillai et al., 2021). While the increase in mortality from deaths of despair have been greatest in the United States, the rise in avoidable deaths serves as a hypothesis and framework to understand and test in Australia, to consider if there are specific national connotations and manifestations.

Alcohol is a culturally sanctioned de-stressor for managing the multiple gendered roles that women perform. Women report, "like most people my age, my Facebook feed is quite cheerfully full of wine memes, and we are sold this image that after a day coping with children and coping with work, and coping with those incessant demands, that we deserve a drink of

155 alcohol. But no women deserves to get breast cancer" (Scott, Lloyd, & Goloubeva, 2019
156 paragraph 61). Noting this observation, the consistent evidence of the carcinogenic
157 properties of alcohol are at odds with how women perceive drinking. Relaxation and breast
158 cancer are the clashing possible consequences of alcohol use for women.

159 Limited peer-reviewed literature currently exists on the purpose of alcohol in midlife
160 women's lives. The available research is European dominated and identifies strong social
161 drivers for drinking. Changes in gender roles, women's social and economic positions,
162 availability of cheap alcohol, and female targeted marketing have been identified as
163 contributing factors to the increasing alcohol intake of British women (Plant, 2008).

164 In this research the concepts of female sex and the gendered term women are
165 considered interlinked. The biological - based on sex - due to the differing impacts of alcohol
166 on women's bodies, and gender as socially constructed due to the unique alcohol practices
167 of women. The theories of de Beauvoir are used in this thesis to understand why women
168 consume alcohol in chapter 9, as de Beauvoir states, "one is not born, but becomes a
169 woman" (de Beauvoir, 2010 p.283) which emphasises the existence of biological sex and
170 the social construction of gender. Simone de Beauvoir finds separation between sex and
171 gender, acknowledging that biological differences exist however social circumstances are
172 what leads a woman to become woman. Differences in sexes influence the processing of
173 alcohol and are often attributed why women experience more health impacts from alcohol
174 at lower levels. However the importance of gender is pivotal to this research. Drinking
175 practices and the reasons for midlife women's consumption are heavily influenced by
176 gendered roles, norms and expectations.

177 Emslie and colleagues (2015) found that for Scottish women, consuming alcohol
178 allowed them to create a space for leisure away from the demands of family and work roles.
179 Alcohol was perceived as a culturally acceptable substance to use for relaxation, a way to
180 cope, or a well-deserved drink after a hard day's work (Lyons et al, 2014). Alcohol was used
181 to reconnect with their younger selves, to assert their identity. Alcohol created space, a break
182 away from children and 'a sense of self' outside of motherhood (Emslie, 2012; Emslie, 2015;
183 Emslie, 2017; Lyons et al, 2014). Similar findings emerged from an Australian ethnographic
184 study with mothers' recounting drinking to allow their pre-motherhood selves to emerge
185 (Killingsworth, 2006).

186 Given the importance of gender on the behaviour of alcohol consumption working with
187 those with lived experience as co-researchers shows potential for improved research