



CHALMERS

Retention and recruitment of female marine officers and ratings

What can be done to make the profession more attractive to women?

Bachelor thesis for Marine Engineering Program

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Göteborg, Sweden, 2022

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PREFACE

This bachelor's thesis constitutes 15 credits and is a mandatory part of the four-year marine engineering program at Chalmers University of Technology, within the Department of Mechanics and maritime science, which comprises a total of 180 higher education credits.

We would like to acknowledge and say thank you to all respondents for their participation and of course the utmost appreciation and thanks to our mentor Monica Lundh.

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SAMMANDRAG (in Swedish)

Inom den maritima industrin är det en brist på kvalificerade sjöfarare enligt BIMCO & International Chamber of Shipping (2021) och sjöfart är traditionellt sätt ett mansdominerat yrke. Där kvinnligt sjöfolk endast utgör cirka 2 % av den totala andelen sjöfarare och kvinnor i maskinavdelningen är ännu färre. Kvinnor i maskinavdelningen på svenska fartyg är inget undantag till detta. Denna statistik måste förbättras för att uppmuntra fler kvinnor att vilja bygga en karriär som sjöfarare tillsammans med män. Därför undersöker denna studie de nuvarande psykosociala samt fysiska arbetsförhållanden som kvinnliga sjöfarare befinner sig i, samt hur kvinnornas situation ombord skulle kunna förbättras. Eftersom kvinnor befinner sig i en minoritetsposition finns risken att de kan utsättas för fördomar, sexuella trakasserier och mobbning från sina manliga kollegor. Detta kan avskräcka kvinnor från att ta en karriär till sjöss. Dessutom undersöks det hur kvinnor inom yrket skulle kunna känna sig mer hemma och vilja stanna till sjöss. Deltagarna, sex stycken, hade minst fem- och högst fyrtio års erfarenhet till sjöss med en erfarenhet på tjuogoett år i genomsnitt. Deltagarna intervjuades med hjälp av en semistrukturerad modell, därefter analyserades den insamlade datan med tematisk analys och på så sätt skapades tre huvudteman följt av sju underteman. Resultatet visar att dessa kvinnor på något sätt har fått utstå fördomar, sexuella trakasserier eller mobbning på arbetsplatsen någon gång under sin karriär men för det mesta behandlas de på samma sätt som sina manliga kollegor. Det framkom också att en möjlig orsak till den låga representationen av kvinnliga sjöfarare i maskinavdelningen kan bero på att kvinnor under deras barndom inte introduceras till sjöfartsnäringen och de tekniska aspekterna på samma sätt som män. Att bilda familj ses vidare som ett hinder för att fortsätta en karriär som sjöfarare. Trots de komplikationer som medföljer att arbeta till sjöss, uppskattar de tillfrågade livet som sjöfarare.

Nyckelord: Sjöfarare, Kvinnor, Sexuella trakasserier, Jämställdhet, Mansdominerat, Sjöfartsindustrin, Bibehållande av besättning, Rekrytering av kvinnliga sjöfarare.

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ABSTRACT

The maritime industry is experiencing a shortage of qualified seafarers according to BIMCO & International Chamber of Shipping (2021), and seafaring traditionally is a male dominated occupation. Women seafarers constitutes approximately of 2% of the total seafaring population and women in the engine department are even fewer in numbers. And women in the engine department onboard Swedish merchant ships are no exception to this. This statistic needs to improve and to encourage more women into build a seafaring career alongside men. Therefore, this study examines the current situation that women seafarers are in, and how their situation could be improved. As women find them themselves in a minority position and thus they risk facing prejudice, sexual harassment and bullying from their male colleagues. This could discourage any women from taking up a career as a seafarer. Moreover, it is explored on how women that are within the profession could feel more at home and stay in the profession. The participants, six in total, who had a minimum of five years' and a maximum of forty years' experience as seafarers with an average of twenty-one years' experience. The participants were interviewed using a semi-structured model, then the data was analyzed by means of thematic analysis where three main themes and seventeen sub-themes emerged. The result shows that these women have in some way career had to endure prejudice, sexual harassment or bullying in the workplace at some point during their careers but that they mostly are treated equal to their male colleagues. It also emerged that a possible reason for the low representation of women seafarers in the engine department could be due to women in their childhood are not introduced to the maritime industry and the technical aspects in the same way that men are. Furthermore, starting a family is seen as an obstacle to continue a seafaring career. However, despite the complications that comes along with working as a seafarer, the respondents do enjoy the life at sea.

Keywords: Women, Seafarer, Sexual Harassment, Gender equality, Male dominated, maritime industry, Retention, Recruitment of female seafarers.

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ACRONYMS AND TERMINOLOGY

BIMCO	Baltic International Maritime Council
CoC	Certificate of Competence
ICS	International Chamber of Shipping
EMSA	European Maritime Safety Agency
ETO	Electrical Technical Officer
ILO	International Labor Organization
IMO	International Maritime Organization
MET	Marine education and training
STCW	Standards of Training, Certificate and Watchkeeping

1. Introduction

Working onboard a vessel is tough since the work environment is characterized by constant vibrations, noises, and polluted air due to exhaust leakage from engines or fumes from the cargo, chemicals, and paints, all these problems are prominent in the engine room as well. It has been for a long time known that awkward working postures and coordination for moving heavy pieces of equipment has been a challenge (Ivergåd, 1978), and difficulties like these still exist today (Forsell et al., 2017; Lundh, 2010; Wagner et al., 2008). Over the years equipment for computerization and automation has increased that requires the engineers also to have knowledge about electric- and electronics equipment (Anderson, 2007; Jensen et al., 2005). More automation has reduced crew size and thus increasing the workload for the remaining engineers (Cahoon & Haugstetter, 2009).

Furthermore, the maritime industry has for a long time been male dominated and traditionally seen as a typical male-bound occupation (Kitada, 2010; Piñeiro & Momoko, 2020). Back in the early 20th century, women working onboard a vessel were usually employed in the “social sector”, which included tasks such as radio operators and various positions within the commissariat. This kind of labor considered as more appropriate for women. Men were employed in “the technical sector” including the machinery space, which was considered as a “man’s labor” (Kaijser, 2005). One reason for this could be because of the demanding working environment in the machinery space onboard (Forsell et al., 2017). The common perception of a sailor today is often that it is a man and could make it difficult for women to identify themselves as a part of the maritime industry. However, there are, after all women serving on board in the technical department and research has been performed to try and understand how they cope on board. To be able to handle the tough environment onboard a vessel as a woman it is argued that they alter their ‘persona’ (Kitada, 2010). This could result in women changing their attitude to become tougher (Kitada, 2010). Other issues women risk facing onboard could include hostility from their male colleagues as men can be reluctant to accept women as seafarers. This unwanted behavior could include incidences of sexual harassment, verbal comments, and physical assault (Thomas, 2004).

As of today, there are still relatively few women serving onboard, both in the deck- and engine departments, although a significantly smaller amount in the engine department. According to a report from the Swedish Maritime Administration from 2010, it was stated that 12% women was working in the deck department and 1% was working in the engine department (Sjöfartsverket, 2010). This report also indicates that there are several factors influencing the decision to enter into the industry such as family and work life balance, that fact that the maritime industry itself being rather anonymous to the big crowd together with negative reports about the industry in the media (Sjöfartsverket, 2010).

Furthermore, the maritime industry as a whole is experiencing a shortage of officers, especially within the technical department and the industry has difficulties in recruiting and retaining seafarers (BIMCO & International Chamber of Shipping, 2021). The low representation of women working on board is also an issue for the Swedish merchant fleet. The fact that women are heavily underrepresented and can be seen as an underutilized recourse to ease the shortage of seafarers. A better understanding of why some women choose to stay in the industry regardless of these issues and what improvements they think needs to be made to attract more women into the industry, it can be assumed that diversity would improve and, as a result, the recruitment base for the seafaring population could grow.

1.1 Aim of the study

The aim of this study is to investigate what the female seafarers within the engine department perceive their work environment, what considers to be lacking and how to improve the working conditions onboard Swedish merchant vessels and thus, making it a more attractive place for women to work.

1.2 Research questions

1. How do female seafarers in the engine department perceive the current working conditions?
2. How do these women think that the working conditions should be improved to make work in the engine department more appealing to women?

1.3 Delimitations

This study will focus on Swedish merchant vessels, specifically, the working conditions for women in the engine department. Therefore, no consideration will be taken to the deck- and catering/service department.

2. Theory

The following chapter contains a theoretical structure on how it is to work at sea onboard a vessel in the engine room. It includes -the working environment, in the present and historically. It also includes how, as a woman, it has its contradictions working onboard a vessel in the engine room and counteracting work for this problem.

2.1 Seafaring, an old and dangerous occupation

Throughout history, humans have travelled the oceans and it has been the fastest and most efficient way to travel and transport goods. Working on board ships has always been dangerous with risks for illness and harmful accidents onboard and it is regarded as a high-risk occupation (Bloor et al., 2000). In a study made by Broch et al (2012) explains that during the period of 1986-1993 and compare the development until 2009 onboard Danish ships. The occupational accidents resulting in seafarer deaths increased more than five-fold compared to workers onshore. If shipwrecks are included, then the relative rate of seafarers' deaths would be ten-fold (Broch et al., 2012).

Working in this harsh environment could also result in developing various forms of cancer. Cancer in the lung, urinary bladder, mouth, oesophagus and the larynx are all more common for sailors than in the general population (Eriksson et al., 2020; Forsell et al., 2022; Kaerlev et al., 2005; Sulern & Rafnsson, 2003).

2.1.1 The stereotypical seafarer

The stereotypical sailor is seen as very masculine, that sailor is harsh, tough, strong, womanize, consume drugs and drink alcohol (Belcher, 2003; Kitada, 2010). An image like this can deter most people but especially women, since they may face discrimination and prejudice from their male colleagues in the belief that women need to prove themselves against this stereotype (Kitada, 2010). Belcher (2003) found that some women, when they told their parents about their interest in a seafaring career faced resistance. However, Kitada (2010) noted that most male seafarers were supportive and tried to help their female colleagues. This culture sometimes gets toned down and are nonexistent on some ships and all male colleagues does not act in a disrespectful way (Kitada, 2010).

2.2 Challenges when working at sea

It is important to understand that the challenges when working at sea affect both genders equally. However, since the stereotypical seafarer is seen as a man this makes it even harder for women to relate to the working situation as a female seafarer. In addition to the harsh working environment on board a common difficulty is the sway of the ship since many of the tasks that is done onboard is being done while standing up or in awkward working postures, staircases and companionways are a hazard that also can be difficult to move around on during seagoing (Forsell et al., 2017; Ivergåd, 1978). Ships also face hazards such as collisions, grounding, and fire (Vidmar & Perkovič, 2015), all of which can lead to the loss of the vessel. A fire onboard can cause severe damage to the vessel and thus the crew, as well as the cargo and to evacuate the ship in the event of a fire to get away is no guarantee of safety. Fires can originate from several things like oil leaking onto hot surfaces, component failures, hot work, and electrical failure (John & Ikeagwuani, 2013).

By necessity seafarers must be away from home for prolonged periods of time, ranging up to six months and sometimes even longer (Devereux & Wadsworth, 2021; Oldenburg et al., 2009).

2.3 Difficulties with work in the engine room

In addition to the already existing challenges when working at sea, the engine room possesses even greater hazards as the engine department onboard vessels are responsible for the ship's propulsion and generation of electrical power for lighting, navigational equipment, maintenance work and various technical equipment for safe operation of the vessel. The foremost task in the engine room is the main engine(s) and propulsion systems. Secondary, the auxiliary engines for generation of electrical power for lighting, navigation equipment and for other auxiliary loads (Branch & Robarts, 2014). The working conditions today for seafarers in general and especially for the engine crew, have similarities to the working environments of shore-based industries and plants. Similarities such as noise, vibrations, high and low temperatures (Bates, 2005; Fuchs et al., 2007; Gorai et al., 2007; Hashimoto & Nihei, 2016; Santos et al., 2008).

2.3.1 Heavy work

Heavy lifting is a problem when performing various tasks related to machinery as tools and equipment can be large and heavy, thus making them difficult and risky to handle. Sufficient and properly placed lifting tools and devices for handling heavy equipment between various locations between decks, storage facilities and workshops has been proven to sometimes be lacking (Lundh et al., 2011). Lundh et al., (2011) also found that moving heavy pieces of equipment in narrow or steep ladders and on platforms that not always presents the possibility to walk straight increased the risk of injuries. Such as crushing or even trips, slips and falls which is a common source of injuries (Jensen et al., 2005). These problems with manual materials handling have been linked to the design of the engine space (Lundh, 2010; Lundh et al., 2011).

2.3.2 Noise

Basner et al (2017), Gingrich et al (2018) and Ivergård (1978) define noise as “undesirable sound”. This is common onboard vessels in all sectors. The primary sources of noise originate from the engine room, from the main engines and propulsion systems, followed by auxiliary engines, boilers and ventilation. High noise levels in the engine room are a well-known problem where the noise levels can reach as high as 105 decibels (Elo, 1985; Forsell et al., 2017; Ivergård, 1978; Kaerlev et al., 2008; Svendsen & Børresen, 1999; Wagner et al., 2008). Such high noise levels cause increased risk for hearing impairment and tinnitus (Forsell et al., 2017; Ivergård, 1978; Kaerlev et al., 2008). Communication while working in the engine room is essential to ensure a safe working environment, however, the high noise levels make communication more difficult. This requires the need to shout near the ear of a colleague or use single language to communicate (Ivergård, 1978).

2.3.4 Vibrations

The main engine and propulsion generated vibrations distributed through the hull in a wide frequency spectrum across the whole ship where the engine crew are most affected (Ivergård, 1978). Vibrations and whole-body vibrations from the ship's hull can be linked to higher risk of back pain, difficulties relaxing and sleep disturbance. (Forsell et al., 2017; Ivergård, 1978;

Wagner et al., 2008). Vibrations also originate from handheld tools such as drills, grinders, needle tools (Forsell et al., 2017). Vibrations from when a ship slams into a wave or ice affects the whole ship and when it is also present in the accommodation areas it can cause that the rest and sleep is degraded and if continued for extended periods of time it increases the likelihood of fatigue (Sillitoe et al., 2010).

2.3.5 Temperatures

The temperatures can be extremely high or exceptionally low, depending on the geographical location of the vessel. Working in cold or hot climates are both problematic. Lundh et al (2011) explains that workers who experienced a very cold climate expressed that it is as problematic as working in an extremely hot climate. The consequence of a very cold engine room is that pipes could freeze, and the ambient temperatures are troublesome to work in since the workers are affected with performance reduction of physical and cognitive abilities (Lundh et al., 2011; Sillitoe et al., 2010).

A hot climate combined with heat radiation from machinery is a frequent problem for the engine crew. Ivergård, (1978) reported that the majority of engine crew is highly affected by hot temperatures since almost half of the crew had thoughts about quitting due to the high temperatures.

2.3.6 Exposure to oils and chemicals

Symptoms such as cough are significantly associated with exposure to soot, dust, and exhaust gases (Forsell et al., 2017). Research tells us that diverse types of oil are amongst the most dangerous contamination for the worker's health (Forsell et al., 2017; Nilsson et al., 2004). Diverse types of work impose various levels of risks of getting soiled. For example, work which includes assignments regarding different machinery malfunctions or breaks could lead to oil spattering onto the worker. Forsell et al (2007) explains that there was daily exposure to polycyclic aromatic hydrocarbons, nitroarenes and oil mostly through hands when working in the engine room. In another study from Forsell et al (2017), it was stated that in the engine crew is frequently exposures to chemicals such as solvent-based cleaning agents, oils on the skin and oil mist, exhausts gases, and soot were a common occurrence. Soot and oil mist can be inhaled by breathing the air from places that have less ventilation than normal. When exposed to polluted air, the sense of smell could get damaged which could lead to misguided information about smells coming from the engine. This could be crucial when the worker normally picks up smells about the engine's status but does not (Forsell et al., 2007).

2.3.6 Stress and fatigue

As discussed, noise, vibrations, high and low temperatures are all stressors for seafarers and stress itself has been associated to sleep disturbance, fatigue, obesity and an increased risk for accidents (Carotenuto et al., 2012; Elo, 1985; Forsell et al., 2017; Haka et al., 2011). Additionally, short shipping routes where ships make port call frequently with short sea passages, sea passages that the crew can relax and recover from port related stress (Baumler et al., 2021; Pauksztat, 2017), increases the exhaustion amongst seafarers that further increases the risk of accidents making seafaring a dangerous occupation (Carotenuto et al., 2012; Elo, 1985; Forsell et al., 2017). All of which makes the quality of the rest onboard matter a lot (Pauksztat, 2017).

2.3.7 Automation, changing the work for seafarers

On modern ships, computerized and automation in the engine room have transformed the engineer's job from being a more manual kind of work to consisting of a supervising role (Branch & Robarts, 2014; Kim et al., 2019). More supervising can lead to the work being monotonous which in turn can in turn lower work morale among seafarers (Cahoon & Haugstetter, 2009). The automation has given the ship owners the ability to reduce crew size and a reduced crew in turn increases the workload and stress on the crew that remains onboard, which gives longer work hours at sea and in port with reduced leisure time (Baumler et al., 2021; Branch & Robarts, 2014; Haka et al., 2011; Knudsen, 2009; Oldenburg et al., 2009; Oldenburg & Jensen, 2022; Pauksztat, 2017). While in port the planning and executing of routine work such as bunkering and maintenance must be done (Bhattacharya, 2009; Haka et al., 2011; Knudsen, 2009; Pauksztat, 2017). Smaller crews also affect the social conditions onboard, and as ships today usually are multi-cultural and this can lead to more social problems and thus leaving a seafarer feeling lonely (Barnett et al., 2006). The small crews, poor social conditions, feeling of loneliness increasing the risk of fatigue and then the thought of quitting (Baumler et al., 2021; Bhattacharya, 2009; Haka et al., 2011; Knudsen, 2009; Oldenburg et al., 2009; Oldenburg & Jensen, 2022; Pauksztat, 2017).

2.4 Seafarers today

Maritime transportation has for a long time been the backbone for global trade with over 80% of volume being done by transport at sea (United Nations Conference on Trade and Development, 2021). The world trade is expected to increase more over the years (Lefkowitz & Slade, 2019). An estimate of the current situation is that 1,89 million seafarers are employed on over 74'000 ships around the world (BIMCO & International Chamber of Shipping, 2021).

The BIMCO & International Chamber of Shipping (2021) estimates a shortfall of STCW certified officers in 2021. However, there has been an increase in officers by 11 percent as well that the officer turnover rate has reduced from 8 to 6 percent since the BIMCO/ICS (2015) report. Some departments such as engineers in management positions are especially affected by the shortfall of officers (BIMCO & International Chamber of Shipping, 2021).

According to Sánchez-Beaskoetxea & Coca García (2015) a probable reason for the shortfall of seafarers could be that the maritime industry is ignored by the masses. When the maritime industry appears in the daily news feed it is most frequently reported in a negative way by reporters that are not experts in the maritime field. However, the report also states that a disaster with oil tankers can cause environmental damage which is difficult to present in a positive way. In the Spanish news feed, the word 'captain' was the most common mentioned from a negative point of view. Altogether ignoring the fact that the captain might not have been responsible for the accident, or it could be because of the captain's actions that the accident was less serious. This leads to the press normally taking notice of the maritime sector when a catastrophe happens (Sánchez-Beaskoetxea & Coca García, 2015).

2.4.1 Seafarers, where do they come from?

Many seafarers, including women, originates from places that traditionally have a culture of seafaring in the family (Barnett et al., 2006; Belcher, 2003). Good career prospects followed

by the balance between work and shore leave, and salary together with the variation of work itself have been pointed out several times to be the biggest reason for taking up a career at sea (Barnett et al., 2006; Dragomir & Surugiu, 2013; Haka et al., 2011; Pauksztat, 2017). Individuals who see seafaring as a profession also have ambitions for the long term to advance in the ranks to become e.g., chief engineers (Barnett et al., 2006).

2.4.2 Why do seafarers go ashore?

Pauksztat (2017) characterized that good working conditions onboard is when there is a general good mood amongst the crew with humor and being friendly with fellow shipmates. Also, that everyone helps and enjoys leisure time together. However, seafaring can be lonely as seafarers are away from family and communication with family is important (Haka et al., 2011; Iversen, 2012; Pauksztat, 2017; Thomas et al., 2003). Seafarers in general leave their seagoing careers just because of family related reasons and women are no exception (Dragomir & Surugiu, 2013; Pauksztat, 2017). Young seafarers in their late twenties or early thirties are usually the common time when pressure from family is at the highest as this a common age for producing offspring (Bao et al., 2021; Barnett et al., 2006). Ivergåd (1978) noted that in the thirties some seafarers start to lose interest in their occupation and go ashore. Dragomir & Surugiu (2013) also reported that most women will leave their career when they get married or become pregnant. Having children could compromise the career for women and make it short-lived (Baker, 2010; Guo & Liang, 2012). As mentioned above, the balance between work and home is also a reason for sailors to leave their seagoing career as being away from family can be stressful (Haka et al., 2011; Oldenburg et al., 2009; Pauksztat., 2017). It can also happen that a better opportunity suddenly presents itself onshore such as a position at a large plant in manufacturing or processing industries which a seafarer decides to go for (Bao et al., 2021; Barnett et al., 2006).

2.5 History of the of women seafarers'

In 1988, International Maritime Organization (IMO) started the maritime gender program Women in Development in order to promote women in the maritime sector (IMO, n.d.), and women have for a long time been underrepresented as seafarers (Belcher, 2003; Kim et al., 2019; Kitada, 2010). Some women have even been told that they should not take on work as a seafarer because it is not feminine (Belcher, 2003; Guo & Liang, 2012). Though, for a long time, women who wanted to sail the oceans were limited to work in the service departments together with their male colleagues as they are more accepted here because it is traditionally seen as a "women's work" (Kim et al., 2019). Wu (2005) explains that a "women's work" on cruise ships traditionally is in guest service, housekeeping, catering, or the galley. Factors relating to the low representation of women in the maritime field could be due to the "stereotypical" view of women. For example, some Taiwanese companies only see's women as a short-term option due to marriage, motherhood, harassment and have the belief that women cause more trouble than they are worth (Guo & Liang, 2012; Magramo & Eler, 2011). On the other side there are also Taiwanese companies that do not consider women to be in anyway inferior to the male seafarer's (Guo & Liang, 2012). Additionally, Belcher et al (2003) found that some older women said that they were prevented from attending several maritime courses in the past but that it has changed in recent years. This shows there are a growing interest for women seafarers, and it have been growing since the 1990:s (Belcher, 2003).

2.5.1 The low representation of women seafarers

Belcher (2003) states that women are estimated to represent 2 percent of the total seafaring population. According to ITF Seafarers (n.d.) the percentage of women working at sea is still about 2%. From the BIMCO & International Chamber of Shipping (2021) roughly 1,2% of all STCW certified seafarers are women, compared with the BIMCO/ICS (2015) there are more women serving onboard which is an increase of 45,8%. In European countries such as Belgium, Denmark, Finland, Germany, Italy, Norway, Sweden, and the United Kingdom they had an average proportion of female seafarers at 9,15% between 1997 and 2001 (Belcher, 2003). While countries such as Indonesia had 5% and Latvia only had 3% whereas Australia only consisted of 0.5% women and India who only had three women out of 43'000 register seafarers in 1998 (International Labor Office Seafarers International Research Centre, 2004).

2.5.2 Women in the engine department, are there any?

It is difficult to find information regarding women seafarers that have engine department as their primary workplace. Most often the deck- and engine department are merged into one department often called "Marine department" as described by (Wu, 2005). However, a study by the Sulpice (2011) shows that female officers and ratings only consists of 0,28% and 0,32% respectively of the total seafaring population. however, only six countries shared details and those were Bulgaria, Germany, Lithuania, Norway, Sweden, United Kingdom (Sulpice, 2011). In a report from European Maritime Safety Agency (2021) things looks a bit different because in this report all the European union countries shared details of their seafaring population, though only for women officers holding a Certificate of Competence (CoC) whereas the ratings are left out. For women in the engine department there are roughly 18% officers holding a CoC (European Maritime Safety Agency, 2021), whereas on Swedish ships women representation in the engine room is only at 3% (Swedish Shipowners' Association, 2019). At the age between 21-25 showed that at this was the highest percentage of women onboard Swedish ships, after this age the percentage of women dropped considerably. Women also tends to start sailing later and stay at sea for shorter times than men (Iverg ad, 1978). Some of it is supported by the Swedish Shipowners' Association (2019), as it is in this age that most women, especially for ratings, leave their career. For the engine departments' side, it seems women are staying as officers a bit longer until 30-39 years of age but then it declines rapidly (Swedish Shipowners' Association, 2019).

On the Marine education and training (MET) universities, there are very few women in the marine engineer program with a participation of about 3% (Belcher, 2003). Shipping companies should support MET universities to recruit more women (Belcher, 2003). According to Chalmers University of Technology (2021) the gender proportion of the examined seafarers were only 1 female to 16 male seafaring engineers in 2021, while from Linnaeus University (2021) there was none female graduate that year.

2.5.3 Benefits of gender equality?

Both women and men benefit from gender equality as it improves the quality of life for everyone (Audette et al., 2019; van de Velde et al., 2013). Thus, according to van de Velde et al (2013), as a ship is a constraining environment where crews are "cohabiting" a more gender balanced environment would also reduce depression, and a balanced crew would also lower

sickness and disability for both women and men. Workplace diversity may also lead to gains in productivity because workers can complement each other as skillsets differ within a workforce which in turn affects job satisfaction and retention of workers (Clark et al., 2021; Dwyer et al., 2003; Niebuhr & Peters, 2020).

2.6 Challenges women face at sea

As discussed above, women that decides to make themselves a seafaring career enters a man's world. Unfortunately, a ship is self-contained, isolated, hierarchically controlled and embedded with masculine values (Kennerley, 2002; Kim et al., 2019; Kitada, 2010). It makes any gender in a minority position have a potential risk of feeling isolated or face some form of harassment (Pike et al., 2021). And the way a ship is designed, job description and arrangement are often modeled after the male physique and characteristics and those are, assertiveness, detachment and physical strength (Kim et al., 2019).

2.6.1 Psychosocial work environment challenges

Workplace harassment and bullying is an unfortunate reality for many people, men as well as women are exposed to it (Forsell et al., 2017; Nielsen, 2012; Österman & Boström, 2022). Sexual harassment, as defined by National Academies of Sciences, Engineering, and Medicine (2018), divided sexual harassment into three distinct categories. First: gender harassment consists of verbal- and nonverbal behaviors that convey hostility, exclusion, or second-class status about members of one gender and objectification. Second: Unwanted sexual attention, as verbal and/or physical undesired sexual advances, which in worst cases can include assault. Third: Sexual coercion, when favorable professionals or educational treatment is conditioned on sexual activity.

First year female cadets expect that sexual harassment or abuse will happen to them and that some men onboard will be sexually interested in them or that they had to face sexual comment and inappropriate remarks (Pike et al., 2021). Women of all ages, but especially younger women, tend to have less power onboard and have a greater risk of sexual harassment. Furthermore, the offender often is a co-worker (Dragomir & Surugiu, 2013; Forsell et al., 2017; Stannard et al., 2015). As the organization onboard is constructed as a hierarchy where some positions have power and authority over others, junior personnel are most exposed from senior officers regarding exploitation and sexual harassment (Belcher, 2003). Even women in senior positions have reported about sexual harassment although to a lesser degree but also reported that some men had problems with taking orders from a woman in senior positions (Belcher, 2003). Women in officer positions that had established a career found that their opportunities were the same as their male colleagues. However, some women had thought that they only got promoted because of their gender (Belcher, 2003). Some negative stereotypes have also hindered women from job and career opportunities in this field (Kim et al., 2019). There are companies that have an equal treatment policy when it comes to the promotion of people however, some companies just do not want to employ women at all. Other companies have policies regarding sexual harassment and are actively working with them through information, courses, training and even have the training prior to boarding. However, there are also women out there who have never heard of such policies and do not know anything about a company's policies regarding sexual harassment (Belcher, 2003).

For those who face work under time pressure, experience harassment or abuse from inside of the organization like the office, superiors or colleagues, there is a higher risk of being involved with an occupational accident (van der Klauw et al., 2016). This correlates with earlier research that identified psychosocial working conditions are risk factors for workplace accidents (Swaen et al., 2004). This suggests that seafarers who are experiencing harassment are more likely to be involved in physical accidents. Women also tends to report more than men on occupational risks and the lack of proper protective equipment (Forsell et al., 2017). Women seafarers also have much more frequently endure more surveillance and have had to prove that they are made of “the right material” compared to their male colleagues to be accepted onboard (Belcher, 2003).

The #MeToo movement started in 2006 and the global campaign started in 2017 (Piñeiro & Momoko, 2020). In the Swedish shipping industry, the #MeToo is known as #Lättaankar, which brought in to light several stories about sexual harassment and bullying (Shippingwatch, 2019; Sjömannen, 2020). It resulted in “Avsiktsförklaring gällande den sociala arbetsmiljön inom sjöfartsklustret” (Declaration of intent regarding the social work environment within the shipping cluster, authors translation) which is a plan on how to make the maritime industry a place where everyone can feel safe and be treated equally. The larger players in this plan is the two MET university’s Chalmers University of Technology and Linnaeus University, followed with The Swedish Transport Agency, the two unions in Swedish shipping SEKO Sjöfolk (SEKO Seafarers, authors translation) and Sjöbefälsföreningen (Swedish Marine Officers Association, authors translation) and Swedish shipowners association as well as Sjöfartens arbetsgivareförbund (The Swedish Maritime Employers’ Association, authors translation).

2.6.2 Things that women need to ‘parry’ onboard

As found out by Belcher et al (2003), some women reported that peepholes were drilled into the restrooms and showers. How women dress also seems to be of some importance and women tend to play down their femininity to make themselves ‘un-attractive’ (Belcher, 2003; Guo & Liang, 2012; Kitada, 2010). Some women are also asked why they would want to be at sea when they could work ashore and then be able to dress nicely thus indicating that being seen as ‘to sexy’ is a concern for some women (Guo & Liang, 2012; Kitada, 2010). Some women also lock their cabin door as things like their underwear have gone missing and sometime male colleagues have entered their cabin at night (Belcher, 2003).

Women tend to be very aware of “gossip” onboard. One woman reported that she was trying to avoid ship mates because she was the only woman on board and perused solitary activities in her cabin to avoid ‘gossip.’ Another reported how she avoided visiting and/or having male colleagues in her cabin as the ‘gossip’ quickly moved to that she was in love with ‘that guy’. Same thing if a woman was talking in a lower tone with a male colleague (Belcher, 2003). Physical relations between women and men do occur onboard however, it can damage the woman’s career but not the man’s (Pike et al., 2021).

2.6.3 Shortage of role models and traditions

There are few mentions of women seafarers in documentation. Kaijser (2005) explains that there is a shortage, or almost a non-existence of female role models and traditions for the

women who enlist on board the Swedish merchant vessels. Based on the reports from BIMCO & International Chamber of Shipping (2021) and Sjöfartsverket (2010), it is evident that the shortage of seafarers working in the merchant fleet is still a problem over the world as well as in Sweden.

2.6.4 Culture of silence

Inappropriate male behavior towards women seafarers often remains unchallenged (Belcher, 2003). Many women kept quiet while enduring sexual harassment onboard to avoid being seen as ‘troublemakers’ due that a ship is a confined space makes it even more difficult to speak out about issues like harassment as doing so may cause harmony amongst the crew to be destroyed (Belcher, 2003; Piñeiro & Momoko, 2020). Some women also tried to keep a low profile onboard in the expectance of being harassed (Pike et al., 2021).

Piñeiro & Momoko (2020) says that reporting is important to get a picture of what is happening onboard and to take care of the victims and that such methods should also be combined with more proactive measures to protect seafarers from any form of sexual harassment and bullying. The onshore management and especially the senior officers onboard have the most influence on the behavioral culture onboard a ship (Pike et al., 2019).

3. Methods

The methods used for this study were semi-structured interviews combined with thematic analysis. The foremost interest was to find out how women perceive the work environment in the engine department and what could be improved to make the working environment more interesting and appealing for women.

3.1 Semi-Structured interview

Due to the covid pandemic period, half of the interviews had to be conducted using online meeting platforms such as the Zoom meeting program to prevent the spread of the coronavirus. After the restrictions were removed, it turned out that meeting platforms were more efficient when interviewing the respondents. To meet up at a location was harder organizing than scheduling a meeting online. The language used in the interviews were Swedish, the transcribed answers and the thematic analysis was made in the same language which were then translated to English when presented in the results.

There was a total of six interviewees interviewed for this study. After a total of five interviews had been performed, the responses started to become homogenous. It was decided that six interviews were enough at this point as the raw data and corresponding analysis showed evidence of saturation. Sub-questions were ready at hand if the interviewee got stuck at a specific topic. However, the interviews were open and free to give the interviewee the possibility to express their thoughts and were not meant to transform answers into numbers.

The interview was divided into three main themes building on the research questions. Within each theme sub-questions were prepared to ensure enough coverage of each theme:

Main themes

1. The current physical working conditions on board - this theme is based on sub-question 1.
2. The current psychosocial working conditions on board - this theme is based on sub-question 2-4.
3. How could the current conditions onboard be improved to be more interesting and appealing for women? - this theme is based on sub-question 5-8.

Sub-questions for each main theme

1. How do you perceive the current physical work environment on board?
2. How do you perceive the current psychosocial work environment on board?
3. How do you perceive the time off duty on board?
4. How do you feel being away from your family for extended periods of time?

5. How do you personally think the current physical work environment on board could be improved to make it more interesting and appealing for women?
6. How do you personally think the current leisure conditions onboard could be improved to make it more interesting and appealing for women?
7. Why did you choose to make a career at sea?
8. If you were to go ashore, what would be the reason(s) for that?

3.2 Demography

Out of the total 6 seafaring respondents in this survey there were 1 electrician and an electrical technician officer (ETO), 2 third engineers and 2 second engineers. In the ages from 31 to 60 years of age with the average age of 42. Their time at sea was between 5 and 40 years with an average of 21 years. Five of the respondents were at the time of the interviews on a ferry and one on an Oil- and chemical tanker. The respondents had between themselves experience from other types of vessels such as “concrete carriers”, Ore-Bulk-Oil (OBO), Roll-on/Roll-off (Ro-Ro), Lift-on/Lift-off (Lo-Lo) or general cargo vessel.

3.3 Sampling of participants

To be able to answer the research question it was necessary to include participants with experience from working in the engine room, thus the selection of participants followed a purposive sampling technique (Etikan et al., 2016).

3.4 Ethics

The participants were all informed that their participation was voluntary and that they would remain confidential. Also, that they could choose to withdraw from the project any time without further motivation. They also gave their written consent to the interviews being recorded.

3.5 Analysis

Based on the data gathered from the responses of the respondents, a thematic analysis was conducted in accordance with the steps described by Braun & Clarke (2006):

The responses were recorded and transcribed, followed by identifying relevant responses to each main theme and then placed as a sub-theme, also called “Code.” For example, if a respondent’s response included information about harassment, the “Code” would fall under the sub-theme “harassment.” When the codes were identified, a summary of all the respondent’s responses to that code was made. The summaries were then represented in Chapter 4. Results; as can be seen in Table 1, Sub-themes.

4. Results

The data collected that were analyzed provided a total of 17 sub-themes based on eight main themes that can be seen in Table 1. The main themes are presented with their own header followed by a summary. The sub-themes follow their corresponding main theme with a summary.

Table 1: *Overview of the analysis*

	Main themes	Sub-themes
1	The current physical working conditions on board	Challenging work environment: 1.1 Physical exposure Design of the engine room: 1.2 Lifting aids 1.3 Construction plans 1.4 Locker rooms
2	The current psychosocial working conditions on board	Macho culture: 2.1 Male dominated 2.2 Jargon 2.3 Leadership Harassment: 2.4 Spreading of rumors 2.5 Exposure 2.6 Molestation and Sexual harassment Balancing work and family: 2.7 Children and the yearning for home
3	How could the current conditions onboard be improved to be more interesting and appealing for women?	On board: 3.1 Diversity 3.2 Separate locker rooms 3.3 Improved policies In General: 3.4 Social structures 3.5 Upbringing 3.6 Increased knowledge of the profession

4.1 The current physical work environment on board

The respondents were asked to explain how they perceive their current physical work conditions onboard their respective vessels. Most of the interviewees answered that the conditions are good. However, at certain times and periods they felt exposed. Factors such as high temperatures, noise, pollution, exposure to oils, and sometimes heavy work were taken into account but was not considered too much of a problem since it is seen as a part of the job. Construction plans of their respective vessel's engine rooms were frowned upon because of the awkward spacing the respondents had to navigate through when performing various work tasks. Working in the engine room is considered different from most work ashore since the frequency

of the work is based on the machinery’s well-being. At some periods of time, there are no problems with the machinery and at a different period there could be problems such as malfunction or machinery breakdown which would cause the crew to work with high intensity. This is considered stressful but at the same time positively challenging. The absence of gender-based dressing rooms is something that all respondents confirmed as a problem (Table 2).

Table 2: *The first main theme with sub-themes*

Main theme	Sub-theme
The current physical work conditions on board	Challenging work environment: 1.1 Physical exposure Design of the engine room: 1.2 Lifting aids 1.3 Construction 1.4 Locker rooms

4.1.1 Physical exposure

All the respondents stated that they were exposed daily to different forms of physical exposure in the engine room. Physical exposure includes heavy lifting, high temperatures, air pollution, such as exhaust fumes and dirty air, contact with oil to the skin and high noise levels. One of the respondents contracted tinnitus because of not wearing adequate ear protection, which she blames herself for. All the respondents thought that physical exposure is a part of the job. It was considered a part of the job since the exposure is a product of the machinery and hence it would be impossible to counterbalance.

“It is hot in the engine room. Of course, because that is part of what it should be”

4.1.2 Lifting aids

Half of the respondents stated there are several physical aspects regarding heavy lifting that need lifting aids. However, all the respondents said that there is no lack in lifting-aid equipment on board their respective vessels today. The equipment includes carts, wagons, tackles, and straps.

“There is a huge difference in the capacity of lifting aids onboard today compared to the beginning of my career thirty years ago”

All respondents emphasized that if there are any obstacles in moving heavy objects, the crew will help each other with moving the objects safely with the intent that any crew member should not contract any injuries.

4.1.3 Design

Close to all the respondents stated that the vessel's design is a problem. The general arrangement plans of the engine room are not considered to be thorough since access is a problem and is not considered suitable for working with the machinery that is installed. Furthermore, the lack of planned attachment points for lifting devices such as tackles is a problem that is experienced on almost every vessel.

A lack of separate toilet facilities is also a problem on every respective vessel. It is considered a problem because in the respondents' experiences, the men do not take care of the facilities. Some examples of not taking care of the facilities include urine stains, insufficient cleaning and lack of hygiene articles.

A third of the respondents stated that there are no sanitary bins installed on board their respective vessels.

“The men are so filthy. It is so disgusting to use the toilets in the engine room because there is urine everywhere”

4.1.4 Locker rooms

All respondents stated that there are no separate dressing rooms onboard. A common perception was that the vessels do not consider that there are people who have certain needs, the foremost importance is always the machinery. Half of the respondents were accustomed, since the start of their career, to change clothes amongst the men and had no problems with that. The other half did clothes changing either on the toilet or in their respective cabins. One of the respondents stated she has a problem with clothe changing amongst men because of fear of negative reactions and how they will affect her in the future. It was stated that the lack of women on board probably makes it difficult to build entire separate locker rooms.

4.2 Current psychosocial work environment on board

Participants were asked to describe how they perceive the current psychosocial work environment they work in. Overall, the respondents enjoy the work environment on board their respective vessels. So much that they do not consider going ashore. However, based on the answers, there seem to still be many shortcomings regarding the psychosocial work environment. Some of the respondents have over thirty years of experience at sea which brought a lot of deficient examples of bad leadership, macho culture, harassment, and being vulnerable overall as a woman in the engine department. According to the respondents, factors like these still exist on board the respondents' respective vessels and are considered to be a substantial obstacle when recruiting and retaining new women in the engine room (Table 3).

Table 3: *The second main theme with sub-themes*

Main theme	Sub-theme
<p>How do you perceive the psychosocial work environment in the engine room?</p>	<p>Macho culture: 2.1 Male dominated 2.2 Jargon 2.3 Leadership Harassment: 2.4 Spreading of rumors 2.5 Exposure 2.6 Molestation and Sexual harassment Balancing work and family: 2.7 Children and the yearning for home</p>

4.2.1 Male dominated

All the participants answered that the balance of the sexes in the engine department is completely male dominated. The respondents stated that during their time at sea, they have always been the only woman working amongst the men, with a few exceptions now and then, but that was nothing that would last for long.

“In three hundred men, I have worked with one woman”

It was stated that there has been no notable increase in women employment in thirty years. In the last ten years on board, one of the respondents who works on a ferry which generally carry more women, had met two women who either was starting or had an existing career in the engine department. Participants explained that there are no female role models on board that they could follow, which makes it difficult to have a good self-confidence when it comes to completing a job as good as the men.

4.2.2 Jargon and attitudes

All the respondents emphasize that the jargon on board is different on every vessel and that the average age of the crew has an importance of the jargon in the engine department. Higher average age among the men would result in a worse environment for the women. All except for one of the respondents agreed on this. The one who did not, stated that the younger men were behaving worse than the older. However, what was common among the jargon on board the different vessels are behavior such as misogynistic and male chauvinistic talking. According to the participants, being a woman is often seen as something negative and the respondents often must assert their decisions and actions in ways their male colleagues do not. Especially in the beginning when they got employed on board. After getting to know the crew it usually was not a problem anymore.

“It was clear that it was negative that the shipping company had sent a woman on board. “What are we going to do with you?” and “We do not want a woman” was said to me.

The respondents felt at times that it is hard to ask their male colleagues for help since it would put them in an exposed situation as the helpless girl that cannot perform her task by herself, and risk being disrespected in the future. Furthermore, respondents fear putting themselves in uncomfortable situations because they have a different gender. It is perceived by the men as there is something wrong with the women and not the harsh male dominated environment they are used to. For example, they are perceived as being too sensitive and faint-hearted. Especially when defending themselves in different circumstances. It was stated that when the respondent was younger, she had the will to act against a man that were not being so nice. However, in the current situation the will is gone.

In order to cope with the feelings of being new, unsafe and insecure it is common to assimilate a macho attitude at the start of their career in order to fit in with the crew. The respondents that assimilated this behavior emphasized that in the current situation they focus on teaching the younger men on board not to apply macho behavior which is considered to be appreciated by the crew.

“There are some who appreciate that there is someone who says no and points out that it is not an okay behavior. At that point they usually join in.”

According to the answers, it is common with “locker room talk” amongst the men regarding women on board. One of the respondents stated that whilst she was present, her colleagues did some foul talking about a woman working in another department, which chocked her. In combination with foul talking other women on board, at least half of the respondents stated that when a man is talking in a hostile manner, no male co-workers would correct him and tell him to stop, instead they would sit silently and grin. Only afterwards did some or one co-worker(s) come up to the respondent to say to her that what foul talker said was not right.

4.2.3 Leadership

The leadership of officers in higher positions than the participants themselves varies from vessel to vessel. Some officers behave as perfectly good leading examples while some do not behave as good according to the respondents. It was common for all the respondents to be treated differently to how a man would be treated, especially in the start of the career or enlisting. They were treated in disapprobation. For example, one of the respondents stated that she was forced to work with heavy lifting of bucket and gas bottles among more. If she ever picks up a wrench to do engine-related work, she would be under intense supervision. Younger officers were not adequate in their leadership regarding how crew behave towards each other according to some respondents. Some stated that when older senior officers would behave in a bad manner, the crew picked up on that behavior and behaved inappropriately as well. It would also go the other way around, if an older senior officer behaved appropriately, the crew would too.

“The way older senior officers behave affects how the crew will behave”

Respondents in senior officer positions stated that it is not that big of a difference if you are a woman or a man when it comes to occupying the position of being an officer. However, it was stated that since there is a wide range of different people who will work together and become a crew. It is very difficult as an officer to make a crew work well together.

4.2.4 Spreading of rumors

It was stated by some respondents that as a woman, you will literally never be one of the guys. Women will always be a little different. According to one of the respondents, this means that women cannot really spend time unrestrained with others in the same way that the respondent imagine a man can do. Furthermore, the women need to take into account aspects like spending time with a male colleague with a closed door. This entails the risk that rumors can be created. For example, one rumor about one of the respondent’s socializing with a male colleague had been talked about for a long time on board before the respondent found out about it, which was considered a common theme. Furthermore, male colleagues to the respondent had issues telling his wife about working along with the respondent since she was a woman.

“A friend of mine on board did not dare tell his wife that he had met me”

4.2.5 Exposure

It is a common theme that the respondents feel exposed in different situations on board their respective vessels. The exposure is of the kind that can be difficult for men to relate to. This kind of exposure is usually related for the women only according to the respondents. For example, when changing clothes in the locker rooms, some of the men in the crew will behave very uncomfortable when a woman is changing their clothes beside them and would often leave the room telling how sorry they were for witnessing it. It was considered as very uncomfortable since it should be no difference whether it is a man or a woman who is changing their clothes. According to the respondents, the co-worker would probably not leave the locker room and say how sorry he was if it was a man that did change his clothing. Being a woman in the engine department is perceived a hard time to fit with the crew which resulted in loneliness. Furthermore, one of the respondents explained that some of her male colleagues will not carry her during drills. The reason for this is because they do not want to risk touching her breasts. It was also stated that there is a feeling of being exposed because you are a woman and will not fit in with the group in a natural way.

“You are always alone as a woman. And then you are treated differently because there is really no place for you. It is not intended for women to be in the engine room. If you want to be a part of the group, you must be one in the group, and you can never be that because someone is always uncomfortable”

All the respondents have under their career been asked why they choose a profession in the engine room. Several respondents stated that they feel as if they must defend their choice of becoming an engine room personnel.

“It feels a bit like you must constantly defend your choice. For men it seems different, like “it seemed like a fun profession” and that is it. As a woman you always must come up with reasons why you chose this job”

Furthermore, it is common that the respondents must explain more than their choice of work. It is described that often they must assert their intentions and decisions. Remarkably much more often than their male colleagues.

4.2.6 Molestation and Sexual harassment

Some of the respondents have experienced molestation while working on board or while being enlisted as cadets. One of the respondents even learned to use a knife for defense. The molestation seemed to not occur when the women grew older or when they had a higher rank among the crew. Sexual harassment was common among some of the respondents as well. It was stated that comments about breasts size, name calling, and sleazy text messaging had occurred but nothing more extensive was reported. For the older more experienced respondents there seemed to be countless occurrences of various harassments distributed throughout their career. According to them it was very bad when they were young and new in the job. It was stated that people who are institutionalized have the tendency to behave like animals no matter how well-behaved they are.

“I can tell millions of stories about men who harass and are acting like complete idiots and how I learned to use a knife”

4.2.7 Children and the yearning for home

About half of the respondents stated that being away from home has affected the choice of working at sea. What is common is to work on vessels in the ferry business with short scheduled turns around two weeks. One out of the six respondents have children. For her it was very hard to find sense in staying at sea since it contradicted her mother's instincts.

“When I had children, it was terrible at sea. I cried all the way to work, and I cried every night at work. I thought it was insane, “What am I doing?” I could not leave my child”

Furthermore, the respondent stated that she had to sacrifice her career to be able to function as a good mother. But that she would not have it any other way. Although her children are almost grown up today, she still has a bad conscience because of being away from home for a third of her children's lifespan.

As for the rest of the respondents, having children was/is not prioritized. One of the respondents does not want children and is living together with a seafarer as well, which in many cases could

complicate the time together when they are not at sea because of their different work schedules. However, she stated that they managed to time it in a good manner so that they are both scheduled to stay home at the same time.

Two of the respondents appreciate the time at sea away from their respective families. It was stated that a break from the family was a refreshing feeling and that seeing them again when they arrive at home was more appreciated than supposedly being at home every day.

4.3 How could the current conditions onboard be improved to be more interesting and appealing for women?

Participants were asked to explain what could be improved on board to make it more interesting and appealing for women working in the engine room. Half the respondents stated that there was not too much that could be changed on board regarding physical measures, although some. There was more emphasis on social deficiencies in the existing society and more than not, not specifically on board the respective vessels (Table 4).

Table 4: *The third main theme with sub-themes*

Main theme	Sub-theme
<p>How could the current conditions onboard be improved to be more interesting and appealing for women?</p>	<p>On board: 3.1 Diversity 3.2 Separate locker rooms 3.3 Enhanced policies In General: 3.4 Social structures 3.5 Upbringing 3.6 Increased knowledge of the profession</p>

4.3.1 Diversity

All the participants stated that an increased diversity among the sexes on board their respective vessels would most likely create a more pleasant work environment. For example, it was stated that when the women had been working along other women on board, although extremely rare, the work environment had been changed from a misogynistic- and male chauvinistic jargon to a more equal among the sexes. Being a woman on board at this time was not seen as an obstacle. It was accepted and it did not make much of a difference if you were a man or a woman according to the participants.

“One time on board a tanker we were five girls. The environment was different then, everything was balanced, and it was not so different to be a girl anymore”

4.3.2 Separate locker rooms

Implementing separate locker rooms on board was a subject all the respondents thought would be something with a positive outcome regarding employing and retaining women as workforce on board. The current situation on board with predominantly shared locker rooms gives room

for feeling insecure and uncomfortable when changing clothes according to the respondents. In order to improve the environment and make it feel safe for women, it was considered an essential aspect; to change clothes in private.

“Had it been the case that there were separate locker rooms from the beginning, the men would have been more accustomed to it and therefore we would not have been treated differently by them”

4.3.3 Improved policies

Half of the respondents stated that improving the policies on board would most likely make improvements in many aspects for women that want to work on board a vessel. Since there are a lot of policies on board a vessel, only those that were considered relevant for the respondents in this subject were addressed. The addressed policies which should undergo improvements, according to the respondents, were policies regarding; pregnancy, how to deal with reports of incidents on board, accessibility to curators on board, and education of the crew regarding equal rights. According to the respondents, policies should be improved and made more modern.

“Train the crew before women arrive at the workplace on board. Then hopefully they do not have to be exposed”

4.3.4 Social structures

When the respondents were asked how the current conditions could be changed on board to be more appealing and interesting for women, all the respondents stated that there were some things to change on board. However, according to the respondents, a cause of the lack of women in the engine room is a result of a deficient social structure regarding the shipping business. It is considered that the role of women in shipping is not taken seriously enough because it has been shaped and adjusted for men since its beginning and still is to some extent. It is perceived that changes such as societal changes on land occur much more slowly at sea. This results in a clash between how land-based workplace equality is experienced compared to how ship-based workplace equality is experienced according to the respondents. According to the respondents, the last generation that helped shaping the Swedish shipping in favor of men is being phased out today. It is considered that there will come a new generation that is more knowledgeable about equality in the workplace and does not stick to old values, superstitions, and more.

“As society changes, so does what is on board, although much slower. The old men on board who thought it was unlucky with women on board have almost died out”

A third of the respondents had witnessed negative remarks regarding pregnancy on board. One of the respondents explained that she witnessed a co-worker that had a child and were then declared stupid by her women colleagues because she chose to stay out at sea as a seafarer instead of returning ashore and take a land-based profession.

“A woman had a child and would continue to work at sea but was declared stupid by her female colleagues. ‘Which irresponsible person would leave the child’ they said”

Furthermore, the respondents explained that a common theme was that whenever a woman got pregnant, they would leave their career at sea for good. This happened every time according to the respondents. It is considered that usually a woman is expected to sacrifice their career to be more available for the child beyond the breastfeeding- and mandatory caring-period. The respondents emphasized that it should be normalized in the social structure for men to stay at home with the children as much as the women are expected to do. In that way women will be able to maintain their career while also having a child or more, according to the respondents.

“When I started working at sea, there was no talking about having children and continuing to work at sea. At that point that was the end of the career for us women”

4.3.5 Upbringing

All the respondents stated that the biggest cause of the lack of women on board at work positions in the engine room is a product of the social structure and how the inhabitants raise their children. According to the respondents, from a young age a girl usually is influenced to be interested in certain subjects of society whereas boys are influenced to be interested in different subjects. The respondents stated that boys usually grow up with a view that men should work with technology and women should work with other things.

“I think why there are so few women out there is because there is no interest. They did not grow up in the garage but as princesses and boys to firefighters. That should change”

This leads to that the girls in general do not want to work with technology according to the respondents. It was stated that women that do not work with technology probably do not know that they have an interest in technology since there was never room to develop an interest since the beginning. This was considered a social structure problem which gets adopted by the parents in which the parents then influence their daughters in believing that technical work, such as work practiced by a marine engineer, motorman, or electrician on board a vessel does not suit them. This is a problem according to the respondents, of which all agreed on needs to be changed.

“How many women know that they have a technical interest? Technical influence while growing up is a big factor which cannot be affected on board but on land”

4.3.6 Increased knowledge of the profession

Half of the respondents stated that another factor which troubles the recruitment of women is the lack of advertisement regarding information about the work in the engine room onboard a vessel in the Swedish merchant fleet. Without the knowledge that the profession exists it is hard to recruit women according to the respondents.

“In order to attract more women, more information needs to come out that the profession exists. Many do not know that the opportunity exists”

It is common that the respondents are not familiar with the information about the profession before they make the decision to make a career as a crew in the engine department. The information usually comes from family or friends or mistakenly stumbled into it according to the respondents. People who do not have anyone in their vicinity which has experience- or is working at sea will not have an awful a lot of ways to get familiar with the profession.

5. Discussion

In this study, women who were experienced as engine crew members was the targeted group. The purpose was to understand how they perceived their work environment and their thoughts on what needed to be changed to attract more women to work in the engine department.

It is well documented that the physical work environment in the engine department is demanding (Forsell et al., 2017; Ivergåd, 1978; Lundh et al., 2011). However, the inquiry has showed that women on board do not consider the physical conditions to be much of a problem. However, on most vessels, the design of the engine room is inadequate. The lack of attachment points for chain blocks results in crew having to exercise heavy lifting and working in awkward positions, all of which is a well-documented problem on board vessels (Forsell et al., 2017; Ivergåd, 1978; Lundh, 2010; Wagner et al., 2008). This could be improved by refining the design of the engine room to improve the working conditions for the crew. Furthermore, the lack of separate locker rooms and sanitary bins created a feeling of exposure. By implementing separate locker rooms with sanitary bins, the women would feel more at ease having some privacy. Separate locker rooms could possibly be something that is difficult to implement on existing vessels but it would be possible to implement in the ships design for new builds. Although, sanitary bins could be installed easily on existing vessels.

The unanimous agreement among the participants, that in order to attract women into the industry, the issue of how a woman is raised as a child is of importance, was not taken into account at the commencement of this study. As previous research has pointed out, for both women and men, becoming a seafarer is often influenced by having a seafaring tradition in the family (Barnett et al., 2006; Belcher, 2003). What is introduced to women during their upbringing was thought by the participants to have a great impact on future decisions, such as choice of career, because it shapes the individual and her interests later in life when it comes to the question of choosing to work at sea.

Our results also showed that there is a lack of information of the nature of the work onboard. Most of our respondents did not plan to establish a career working in the engine room from the beginning. However, a lot of them were introduced to the profession indirect when they were figuring out what to do with their career. For example, one of the participant wanted to become a captain and therefore she studied in the deck department. Furthermore, she was introduced to the engine department by the MET-school that had a mandatory task in the educating plan which included introducing the students to both the engine- and the deck departments on board. At that time, her interest switched from the deck department to the engine department. The perception of the profession is also often supported by the negative 'view' that is often written in the papers, e.g. The attention that maritime accidents gets is particular when oil spills are a part of it (Sánchez-Beaskoetxea & Coca García 2015). In combination with a lack of advertisement, this creates issues when recruiting new people to the engine crew. The advertisement of the work at sea is something that the whole industry needs to work on and this is something that Belcher (2003) also noted, where the MET universities have a key role. In order to improve the advertisement of the information regarding the shipping industry, more resources should be prioritized for reaching out early to elementary- and high schools, higher educations and job fairs to inform the people about the shipping industry as a whole and especially the engine- and deck departments.

It is a known fact that the shipping industry is male dominated (Kitada, 2010; Piñeiro & Momoko, 2020). Our results showed that more often than not, the participants are the only woman on board when they are working, and it is documented that women do not prefer to work at male dominated workplaces (Dragomir & Surugiu, 2013; Kim et al. 2019; Kitada, 2010). Being the only woman on board in a male dominated environment can be tough because the jargon has proven to be misogynistic and male chauvinistic by examples of the participants, which has been noted by the industry (Shippingwatch, 2019; Sjömannen, 2020). Our results noted that it seems to be a clash between shore-based- and offshore-based workplace equality implying the offshore workplaces moving more slowly towards equality. This clash creates room for behaving in a negative way towards women on board. Young women in the start of their career who are accustomed to a modern view of gender equality risks not feeling at home in such a workplace. This could be one of the major reasons why there is a great shortage of female seafarers in the engine room.

The shortage of female sailors results in the lack of female role models on board which makes it hard for the participants to gain self-confidence for completing a job. Moreover, previous research has pointed out that being a woman on board is often seen as something negative (Belcher, 2003; Kim et al., 2019). Our results align with previous research by Belcher (2003) and Kitada (2010) and shows that women on board often must assert their decisions and actions in ways their male colleagues do not have to, especially in the beginning of their career. This proves that a woman is not entrusted as much as a man in the role as an engine crew member. However, being new in a profession, regardless of gender and profession, often means that you need to prove yourself to your new colleagues and superiors. Our results points to that it is common for women who are starting their career to assimilate a macho attitude. Although, the macho culture probably varies on different vessels. The assimilation was most prominent in their early career as they wanted to prove themselves to their colleagues. After a period of time, the macho culture seemed to be of less importance as they got more accustomed to their role. This is also noticed in previous research on women officers on board (Kitada 2010). One explanation to this could be that the women become desensitized in the profession and therefore indirectly accept the jargon without thinking about it. Contributing factors to the jargon on board are correlated to the officers' competence regarding leadership. Previous research by Pike et al (2019) points out that the senior officers have the most influence on the behavioral culture on board a ship. Our results show that when older senior officers behave in a bad manner, the crew would pick up on that behavior. Furthermore, if the senior officer behaved in a good manner instead, the crew would pick up on that behavior likewise. With this in mind, it is crucial how the officers act towards the crew and that it is the leadership on board that sets the standard in how the crew will act towards each other.

Previous research by Baker (2010) and Guo & Liang (2012) points out that having children or getting married could possibly be the end of their career. Other research also points out that women will leave their career when they get married or become pregnant (Dragomir & Surugiu 2013). Since it was not prioritized having children by the majority of the respondents, one could assume that the career is their priority since having children would compromise their career. This makes it a plausible cause for not starting a family. The reason why it was not prioritized to have children was not stated by the participants except for one who did not want children at any time. Because you work away for longer periods of time, it can be difficult to see a future career as a seafarer with children. It can be difficult to put together the puzzle of life when you are not going to be a part of it for a big portion of time. Previous research shows that the

perception of having children is something that is 'normal' in society (Baker 2010). This is a part in the social framework which could put a pressure on the women working at sea to feel ashamed because they do not wish to have children. Moreover, our results showed that there is a lack of preparation on the part of the shipping companies regarding pregnancy. Pregnant women workers are not a topic that the shipping companies have made a thorough evaluation of. This could make having children an even harder decision to make since you are not supported by the company. It could also benefit the men who have young children at home if the preparation was refined, which could be one way to retain skilled women and men in the industry.

Based on the results, there is a common denominator that despite all the obstacles, the participants enjoy their workplace at sea and have no desire to go ashore. Neither could they see what they would do if they ever decided to go ashore. Furthermore, it is proven in previous research by Pike et al (2021) that women often do speak positively of their workplace at sea.

Discussion of methods

This study was performed in a qualitative approach with semi-structured interviews. Positive aspects of this approach are that the interviewees received open questions which gives room for development and expression of their experiences in a thorough way. With this method, the participants could talk freely and without boundaries, which resulted in well-detailed answers and hence more data could be used for the analysis. However, it is questionable whether the semi-structured interview-method is better than using a structured interview for this kind of topic. The participants could be too assimilated to the environment to give nuanced and open answers. On the other hand, a pre-written structured interview could miss vital information given it builds on previous research and the researchers' experience of the work in the engine department.

Most of the interviewees thought that the questions regarding the current work environment were too open and had trouble answering them. This could have made the analysis somewhat inadequate compared to a structured interview in which it would have pointed to problems the participants do not naturally think about because of possible assimilation. Regarding credibility, interviews in combination with thematic analysis turned out to be a very thorough way of gathering data since every answer is processed and put into context. Although, since the results are based on the interviewees' personal thoughts, the answers could fluctuate in terms of credibility based on the participants' mood, especially when answering open questions such as the questions we did ask.

The participants were purposely selected to ensure they had sufficient knowledge of the work in the engine room. The least experienced participant had five years and it could be argued if that was enough. However, given the very limited female population which the industry holds and to be able to find a sufficient number of participants this was a necessary trade off.

6. Conclusion

Overall, the respondents were generally satisfied with the physical work environment on board. There were suggestions on how the design could be improved, but the biggest challenge was in the psychosocial work environment. The jargon and how some male colleagues treat women co-workers are a problem and there is a lack of female role models. They also lacked a strategy within the shipping company for how to be able to start a family and still remain in the profession.

They also considered that the recruitment of women for a future career in a male-dominated profession must start early in adolescence. At an early age, women need to be introduced to technology and traditionally male arenas. The image and marketing of shipping also needs to change to attract women to the industry.

6.1 Recommendations for further research

The problem with harassment at the workplace on board seems to be bigger than just for women in our research. Both women and men usually face some form of harassment on board, thus a broader view of the psychosocial environment would be something to look in to.

Most young girls seem to be shaped by the society in a way that makes them less interested in technology and traditionally male dominated areas. However, as our results shows, the respondents were in fact interested in technology and male dominated areas such as working in the engine room. Our respondents also emphasized improving this part of society so that girls from a young age also get included in technology in general, and specifically in the maritime industry. An in-depth study of this topic would probably be interesting.

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