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Seasickness amongst Less Experienced Seafarers

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Summary

This is a study about seasickness experienced by less experienced seafarers to determine how big part of them are suffering from symptoms and if seasickness affects their work at sea. The study is based on responses to a questionnaire made for students at UAS Novia studying Maritime Management in both the Swedish and English degree programmes.

The thesis includes information on treating and preventing seasickness and about the conditions in which the sickness has occurred. I have also studied how common seasickness is and if previous seafaring experience has an influence on whether you get seasick or not. The information has been gathered from the respondents own experiences.

Language: English Key words: Seasickness, Motion sickness, Seafaring.

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1 Introduction

Motion sickness, also known as Travel sickness can be experienced in cars, trains, airplanes, rollercoasters or similar amusement park rides, at sea or even in a 3D movie theatre or using modern virtual reality devices. It is quite common even amongst healthy people and does not affect a specific group or type of persons.

The sea isn't always smooth and the ship is not always fully loaded. Having no cargo on board changes the stability drastically and hard wind combined with a rough sea can get the vessel rolling in no time. Sea sickness is something to be aware of during any voyage and it might even hit the most experienced sailor when the conditions are right.

Having experienced it myself a few times during rough weather, and having seen it amongst many of my fellow seafarers, I decided to study how many of the students/new seafarers studying at UAS Novia are actually suffering from it and in what scale.

1.1 Objective & Research questions

My main objective with this study is to find out the number of less experienced seafarers suffering from seasickness and its effect on them. Are they able to work while experiencing it or does it bother them at all? Other themes in this thesis include the causes of seasickness and prevention at sea and which medications are being used in Finland for prevention and treatment of seasickness.

Previous sailing/boating experience and its correlation with becoming seasick is also discussed and how common seasickness is outside of the focus group.

1.2 Delimitation

This thesis is focused on seafarers which have had a career at sea for approximately less than 5 years, but have at least done their first 60-day practise at sea. This study gathers information using a web based survey and was distributed to students studying in the degree

programmes in Maritime Management (MM) and the Swedish counterpart in Sjöfart (YH) through the student union ENÅ's Facebook page and by informing each class representative. Older students' responses with less experience are also accepted.

2 Motion Sickness

Kinetosis, motion sickness, travel sickness, car sickness, seasickness, *morbus nauticus*, are just different words for the same condition. It occurs whilst travelling in a car, airplane, vessel or any other vehicle. It can even be experienced by just perceiving motion in e.g. a 2D/3D movie theatre, using Virtual Reality goggles or just by seeing a regular film from your computer screen.

Motion sickness generally comes easier to children from the age of 5 to 12 years, women, pregnant women, and older adults than it comes to anyone else. Children of the age under 2 rarely experience it. Also, persons who experience migraine headaches or have any conditions which interfere with sensory input (e.g. labyrinthitis) are at bigger risk of possibly suffering from motion sickness. (Healthwise Staff, 2014) (Melissa Conrad Stöppler, 2015)

2.1 Symptoms

Symptoms are quite individual and can vary widely, even in the same individual on different days. Some may experience all of them intensely while others may get by completely unscathed.

The most common symptoms are:

- A general feeling of illness
- Nausea
- Vomiting
- Stomach cramps
- Headache
- Sweating
- Paleness

- Poor coordination of movements
- Strong salivation
- Fear
- Fatigue
- Anxiety

In most cases the symptoms ease and stop when the motion stops. Although some people might experience symptoms up to a couple of days after the motion has stopped. (Melissa Conrad Stöppler, 2015) (Healthwise Staff, 2014) (Dr Roger Henderson, 2015)

2.2 Causes

The causes of motion sickness are not completely known, but most experts believe that the cause is a conflict between different senses your body is giving to your brain. A good example is being inside your cabin on board a ship. The vessel is rolling and your body clearly feels it, but it is in conflict with your eyes (vision), which can't seem to record this movement, thus creating a conflict between senses and possibly creating symptoms mentioned in the previous chapter. Another good example is the exact opposite of the first one. You are using Virtual Reality goggles or watching a 3D movie in which your eyes (vision) send messages to your brain of movement, but none of the other senses feel any motion, thus creating a conflict. (University of Maryland Medical Center, 2014) (Melissa Conrad Stöppler, 2015)

3 Previous research

The studies were found using Google, the database of The University of Maryland Medical Center and Pubmed(US National library of medicine). Key words were seasickness, studies on seasickness, motion sickness, motion sickness + seafarers.

3.1 Seafarers vs. non-seafarers

A comparison was made by the Defence Medical and Environmental Research Institute to find out whether there was a prevalence between Singaporean soldiers of the navy and army in the matter of seasickness. The soldiers were working on board naval platforms. They used a self-administered survey for 503 personnel during the monsoon period in 2001 (January to April).

The results showed that 59,2 % of the army soldiers experienced seasickness whilst only 38,3% of the navy soldiers experienced seasickness. The most common symptoms were headache, nausea and dizziness. (Defence Medical and Environmental Research Institute, DSO National Laboratories, 2006)

These results could indicate that experience at sea might help overcome seasickness. The more someone spends time at sea, the more they get used to the motions and feel more relaxed.

3.2 Biofeedback Training

55 pilots who were forced to stop flying due to motion sickness were trying out a new method to overcome it using a biofeedback training and relaxation program. They were sat down in a tilting and rotating chair to get them sick. The biofeedback instruments were recording skin temperature and muscle tension. Using relaxation techniques (muscle relaxation and mental imagery) while spinning on the chair. 76% of the pilots no longer felt sick as they got used to it and learned to relax. (Ehrlich, 2014)

It seems that a big part of those suffering from motion sickness can overcome it by relaxing and try not to focus on the movements.

4 The Human Balance System

A properly functioning human balance system allows us to do all necessary things in our daily lives e.g. walk straight, climb stairs or ladders, do sports, see clearly while moving, basically anything that has to do anything with moving or trying not to move.

Our balance system consists of multiple complex organs and mechanisms, all working together to achieve an equilibrium position of the body. The vestibular receptors, the visual system and the somatosensory system work together and send information to our central nervous system, from which it continues to our muscles and helps us keep our balance. (National Dizzy & Balance Center, 2015) (Olchowik, 2015) (Vestibular Disorders Association, 2016)

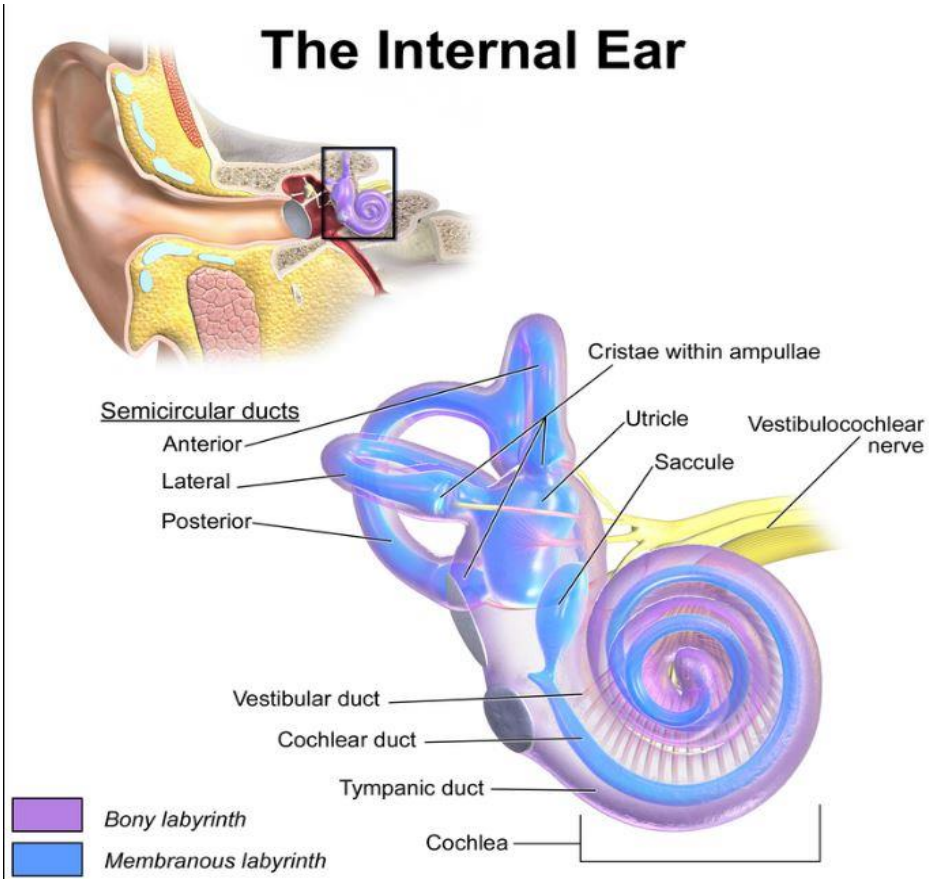

Figure 1 The inner ear.

4.1 The Vestibular system

The Vestibular Organ is an extremely complex balance organ located in the inner ear on both sides, feeding your brain with information about the movements and position of your head as well as sending signals to the cortex to achieve perception of gravity. The Vestibular system consists of three semi-circular canals/ducts and the otolithic organs utricle and saccule. (Shannon L.G. Hoffmann) (Lincoln Gray)

4.1.1 Semi-Circular Canals

The three semi-circular canals are keeping track of the three-dimensional space being at right angles compared to each other, covering the upward, forward and sideward movement much like the X, Y and Z axes in mathematics. These canals are filled with a fluid known as endolymph, which signals the brain about direction and speed of rotation of the head. These canals have a bulged end which is called the cupula and it contains hair cells called cilia. When your head begins to move, the fluid inside the canals starts to move, thus making the hair cells bend. This signal is forwarded and interpreted as movement. This is how the brain knows how to keep your body balanced no matter the posture.

If even one of these three canals are injured, the sense of balance is lost by the person. (Healthline Medical Team, 2015) (Lincoln Gray)

4.1.2 Otolithic Organs

The Saccule and Utricle are similar organs located against the walls of the inner ear between the cochlea and the semi-circular canals. They are at a roughly right angle to each other, where the utricle is responding to movement in the horizontal plane and the saccules is responding to movement in the vertical plane.

These organs can detect linear accelerations and displacements of the head (e.g. tilting or translational movements. The organs also have hair cells, but these hair cells are covered with a gelatinous layer and the otolithic membrane, which is filled with calcium crystals.

So when a person tilts his/her head, this membrane is moved by gravity which in return makes the hair cells move and motion is detected. (Purves, 2001) (Lincoln Gray)

5 Prevention of Seasickness

Avoiding seasickness is crucial to good morale and general wellbeing on board as well as staying focused on the job. There are many other ways to prevent it or ease the symptoms than just medications and I find it crucial to this chapter to take them into consideration. Even if some of them might not have any scientific proof of helping, other than the person getting sick believing in it.

5.1 Tips based on experiences

These tips may or may not help and their effect is quite individual. What helps one person might not be so useful to the other and can only be found out by experimenting what helps in each individual case.

1. Seek out an area with fresh air and a view to the horizon. As previously already discussed, a conflict of senses might trigger seasickness.
2. Avoid excessive consumption of alcohol, liquids and foods which aren't easy on the stomach. Especially heavy, greasy and spicy food may worsen your symptoms.
3. Drink some cola, since it contains phosphoric acid and sugars which can be found in several over-the-counter anti-nausea medicines.
4. Some people feel that constantly having a small amount of food in your stomach helps preventing sickness.
5. Ginger is also said to help some people.
6. Find a seat in the middle of the vessel, where the motion isn't as large as on the edges. And try to sit with your face pointing to the direction of travel.
7. You should avoid reading, since it might make you feel nausea.
8. Lie down and close your eyes, so they won't send information to your brain that you aren't moving.

9. As mentioned before, anxiety contributes to sea sickness. Relaxing should help the symptoms according to some. And constantly thinking about it and focusing on it makes it even worse.
10. Strong odours might worsen the symptoms.
11. Per Chinese medicine, using a wrist band which applies pressure to an acupuncture point might help. (WebMD, 2001) (Yeager, 2013) (Melissa Conrad Stöppler M. , 2016)

5.2 Medicines

Seafarers have suffered from motion sickness ever since the boat or ship was invented and is mentioned in multiple different records around the world. Ancient Chinese and Indian have mentioned ginger to be used as a preventive measure.

Sea sickness is constantly mentioned in Roman and Greek texts (Hippocrates, Cicero, Seneca, Horace). Even amongst the British navy during the 18th and 19th century. Some famous persons to this day have suffered through it like Columbus, Admiral Nelson from the British Navy and Charles Darwin. The advantages of the modern world are that we have discovered medicines which help with this problem, and are easily available to anyone. (Motion Sickness Guru, 2011-2016)

There are a bunch of different medicines for nausea and motion sickness. In this chapter the most common medicines are listed and explained what they contain and how they work.

In Finland, the most common over-the-counter medicines are Meclizine and Cyclizine and the most common medicine with prescription is called Scopolamine hydrobromide and are all recommended to be taken before a sea voyage.

5.2.1 Meclizine (Postafen)

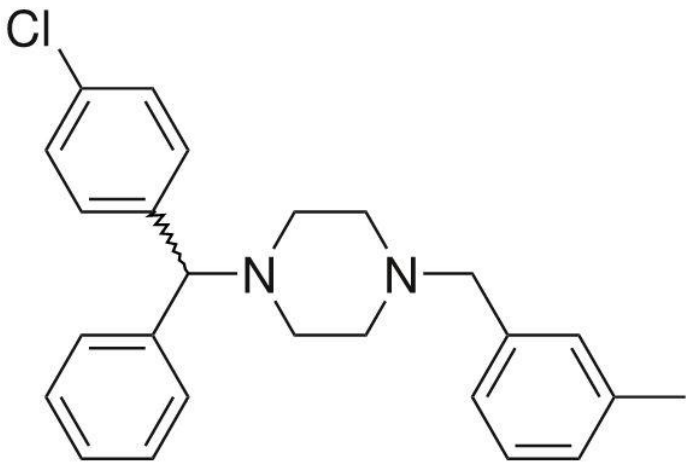

Figure 2 Meclizine Structure

Postafen contains an antihistamine called Meclizine, which reduces the natural chemical histamine's effect in the body. It is used to treat nausea, vomiting and dizziness which are caused by seasickness. It may also be used to treat vertigo, a disease affecting the inner ear and causes dizziness.

If a person suffers from liver or kidney disease, asthma, glaucoma, an enlarged prostate or urination problems, that person should consider seeking a doctor's advice before consuming this medicine. It may also affect your ability to think clearly and your reaction time.

Meclizine reacts with alcohol and may worsen some side effects experienced from the drug. Also several other medications may react with meclizine and cause even more sleepiness e.g. cold/allergy medicines, sedatives, narcotic pain medicines, sleeping pills, muscle relaxers and seizure medicines.

Meclizine should not be given to children under 12 years old. For it to be used to its full potential, it should be taken approximately 1 hour before voyage or when the weather is about to worsen. One dose should be taken every 24 hours to maintain effectiveness, but for treatment you might need to take several doses during one 24 h period. The usual dose for an adult person is 25 to 50 mg once a day as needed. For children over 12 years, 25-50 mg but should not be given more than 50mg per 24 hours.

The most common side effects which don't require any treatment caused by this medicine are headache, vomiting, dry mouth, tired feeling and drowsiness.

You should immediately seek out a doctor for the following symptoms; Cough and difficulty swallowing, dizziness, fast heartbeat, hives, itching and skin rash, swollen face or parts of it, shortness of breath, tightness in the chest and unusual tiredness or weakness. (Cerner Multum Inc., 2012)

5.2.2 Cyclizine (Marzine)

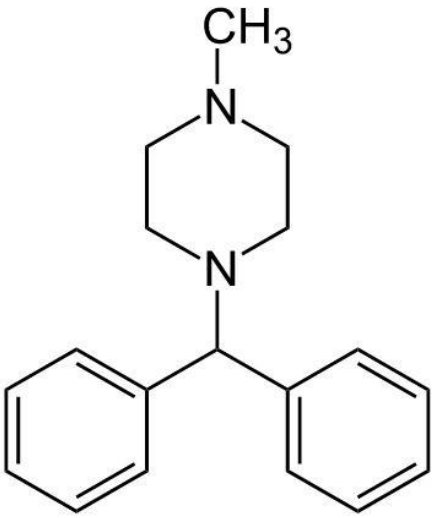

Figure 3 Cyclizine structure

Cyclizine is used to treat and prevent motion sickness, but may also be used for other purposes determined by the doctor. This is the only medicine found on board Finnish vessels for the treatment and prevention of seasickness.

It is an anticholinergic, which operates by blocking a chemical messenger in the brain and helps with nausea.

You should not take cyclizine if you are already using another anticholinergic. To prevent motion sickness, you should start taking cyclizine approximately 30 minutes before voyage or rough weather.

Cyclizine can cause drowsiness and blurred vision and it is recommended to not operate any machinery or similar until known what kind of reaction a person has with this drug. Alcohol or any other drug causing sleepiness or drowsiness should be avoided while taking cyclizine.

To children of the age less than 6 cyclizine should not be given without checking with a doctor. Breast feeding should also be avoided after having taken it since it is unknown if cyclizine is excreted in breast milk.

This medicine usually doesn't cause any side effects, but the most common ones are drowsiness, dry mouth, nausea and blurred vision.

You should seek out a doctor immediately if any of the following severe side effects appear: Rash, hives, difficulty breathing, tightness in the chest, swelling on the face or tongue, painful, difficult or no urination.

The usual dose for an adult to prevent motion sickness is 50mg approximately 30 min before voyage. The dosage should be taken every 4 to 6 hours but not to be taken more than 200mg during a 24 h period. The dosage stays the same for treating nausea or vomiting. For children of the age of 13 and above you can give the same amount as for adults, but for children between the ages of 6 and 12 it is 25 mg up to 3 times a day.

Cyclizine reacts to a variety of different substances and other medication. In a case of emergency always make sure you have mentioned having taken cyclizine. (Cerner Multum , 2016)

5.2.3 Scopolamine hydrobromide (Scopoderm)

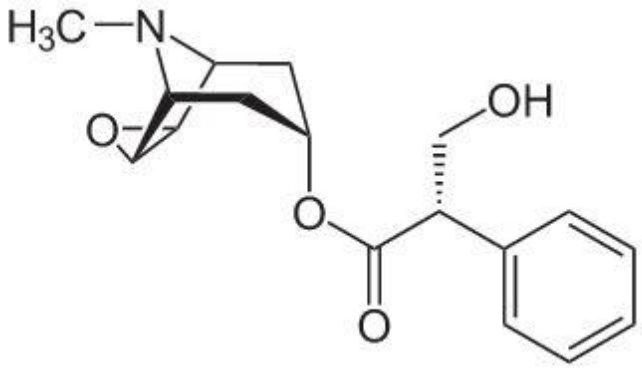

Figure 4 Hyoscine hydrobromide structure

Scopolamine is a medicine used for prevention of motion sickness and treatment of nausea, dizziness and vomiting. It comes in the form of a band aid and is to be placed behind one's ear prior to any voyage. Its effect can last up to as long as 72 hours after application.

Scopolamine is an anticholinergic which works by blocking neurotransmissions in the brain.

A person should keep from using scopolamine if one is suffering from the following: Narrow-angle glaucoma, difficulty swallowing, stomach or bowel problems, bleeding, acid reflux disease, myasthenia gravis or blockage of the urinary tract.

As all medicines have side-effects, and so does scopolamine. They are more likely to appear in the elderly but it usually depends on the individual. The most common are blurred vision, dizziness, drowsiness, dry mouth.

Operating any heavy machinery, driving, piloting an aircraft, diving or similar activities should be avoided when any concerning symptoms appear.

In any of the following severe cases, a person should seek immediate medical help: Rash, hives, itching, difficulty breathing, tightness in the chest, swelling of face, difficulty urinating, pain or reddening in the eyes.

To achieve the best result of this medication, the patch should be applied 5-6 hours before any voyage or on the evening before. The patches medical effect will last approximately 72 hours and should be changed after every 72 hours. The patch needs to be placed on a clean, dry and hairless spot behind the ear. Taking a shower or minimal water contact has no effect on the bandage, but should still be kept as dry as possible. The patch should only be used to adults and to children of the age of 10 and above since its safety on children has not been tested yet. The patch releases 1.5 mg of a substance called scopolamine hydrobromide over the 72 hours it is attached. (Novartis Finland Oy, 2014) (Cerner Multum, 2016) (Novartis Consumer Health, 2016)

6 Research Method

In this study, I'm using a quantitative research method to properly get a picture on just how many of the new seafarers get seasick, what kind of background they have, how badly they experience sickness and how it affects their work on board a vessel. I'm also using a qualitative research method by letting them answer a few questions in their own words, questions which are hard to put into figures. It gives them more freedom to answer however they feel they can express themselves the best.

My target group for this study was seafarers with at least 60 days of experience working at sea not including those with more than 5 years of experience.

Responses were gathered by spreading the questionnaire on Facebook pages and by letting those who have already answered it further spread it to their classmates and colleagues. I believe this was the easiest way of getting enough responses for analysis.

A rough draft of the questionnaire was made by myself based on my research questions and predicting possible outcomes. I wanted some of my fellow students to help me with the details and refinement of the questions with an aim to make the survey easy and fast enough for everyone to give the questions some thought and eliminating any misinterpretation.

The questionnaire was made public end of September and responses were gathered for 3 weeks. Enough responses had been gathered in that time for me to start the analysis. I was able to gather 61 responses from students currently studying in UAS Novia.

During an email conversation between the student secretary and myself, I was able to get my hands on the total number of students currently studying Maritime Management both in the English and Swedish (Sjökapten/Sjöfart) degree programmes, from which I was able determine what percentage of students had answered the questionnaire. The numbers do not specify if the students are actively studying or whether they are absent or present during the fall semester 2016.

Since the study was aimed at students who have at least finished their first 60 days' practice, I will have to subtract them from the total student amount qualified for the study.

Students who have answered the questionnaire: 61

Total number of students currently studying Maritime Management in English and qualified for the study: 103 – 27 1st year students= 76

Total number of students currently studying Sjöfart/Sjökapten and qualified for the study: 199 – 42 1st year students = 157

Total number of students qualified for the study: 302 – 69 = 233

This will give us that 61 students out of 233 qualified students have answered the questionnaire and will give an approximate answering rate of approximately 26% of all qualified students. Although this does not take into consideration that persons already graduated or who might have quit their studies would not have answered this survey.

7 The Results and their Interpretation

The results are presented using Microsoft Word's own figures and tables.

7.1 Background and experience at sea

7.1.1 Experience at sea

The most answers were given from seafarers or students with more than 300 days of experience at sea with 29 respondents, which covers approximately 48% of all respondents. The second most responses were gathered from those with 100 – 300 days of experience at sea. The least amount of responses came from seafarers with less than 100 days of experience.

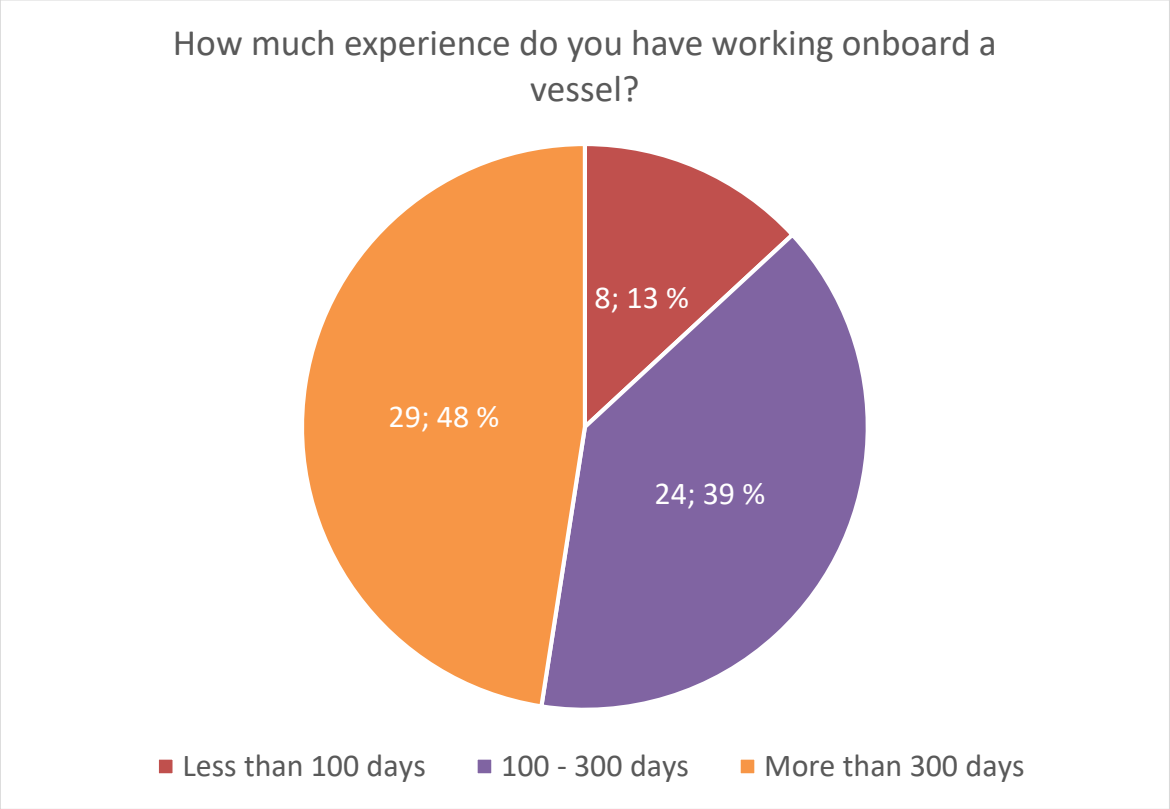

Table 1 Experience

7.1.2 Sailing and boating experience

Most of the respondents have been sailing or boating for a long time previous to their career at sea. A total of 31 (51%) of all the respondents. 21 (34%) have had at least some experience sailing or boating during their life and 9 (15%) have had no experience what so ever during their life. From this we can determine that 85% (52 responses) of the respondents have had experience in sailing and boating. Some more than others.

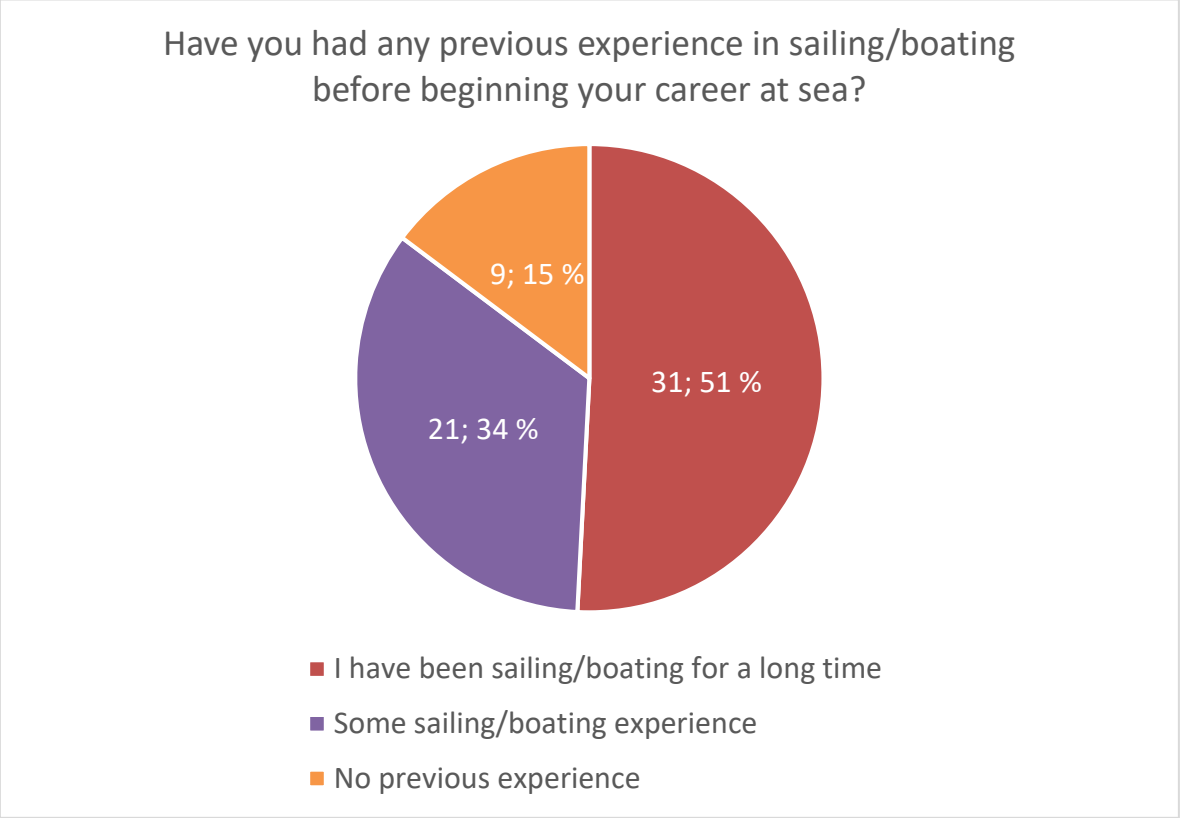

Table 2 Previous sailing experience

7.2 Getting seasick

7.2.1 past and present

From a total of 61 responses, 48 (79%) admit to get or have gotten seasick at least once in their life and 13 (21%) say they never have gotten seasick to this day.

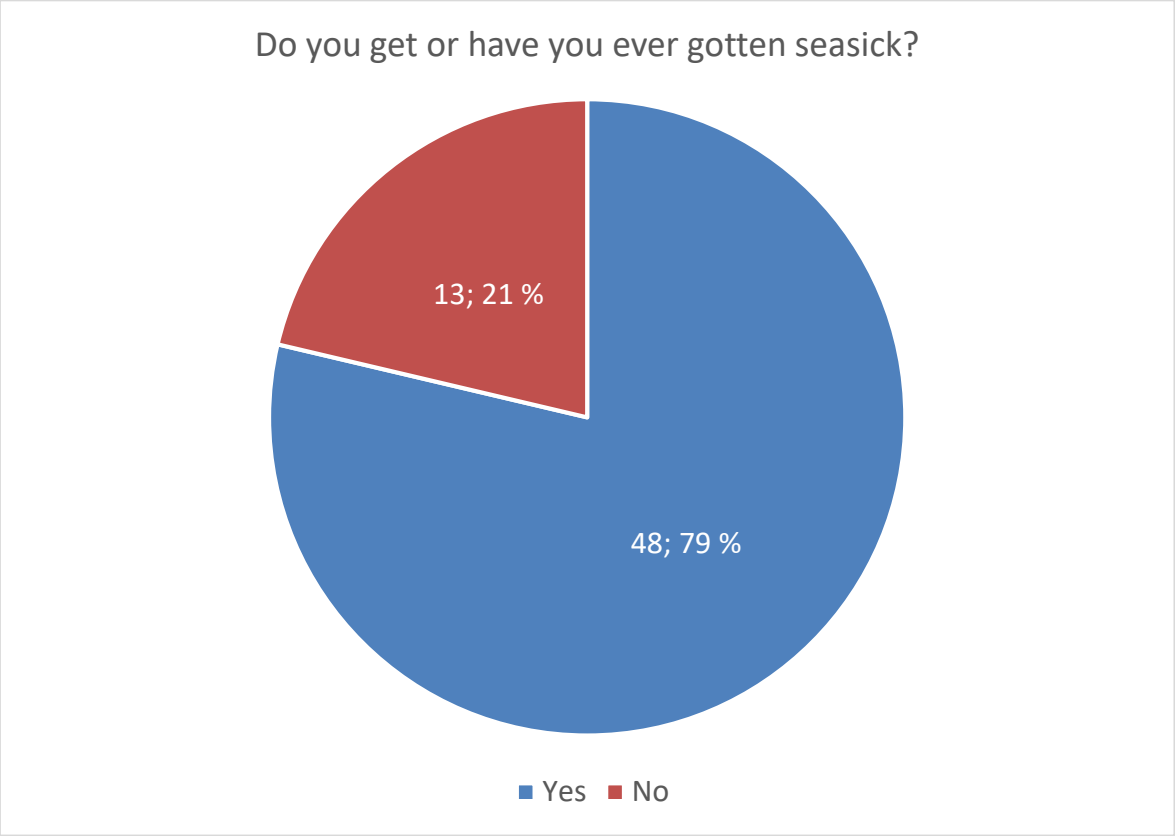

Table 3 Getting seasick

7.2.2 Frequency

The possible answers for this question and amount of responses:

1. Never 8 (13%)
2. Less than once a year 26 (43%)
3. Once a year 8 (13%)
4. A few times a year 19 (31%)
5. Once a month 0
6. A few times a month 0
7. Almost weekly 0
8. More often 0

Most of the respondents (43%) get seasick less than once a year. Second most respondents were those who get seasick a few times a year with 31%. In 3rd and shared place is less than once a year and once a year with both having 13%.

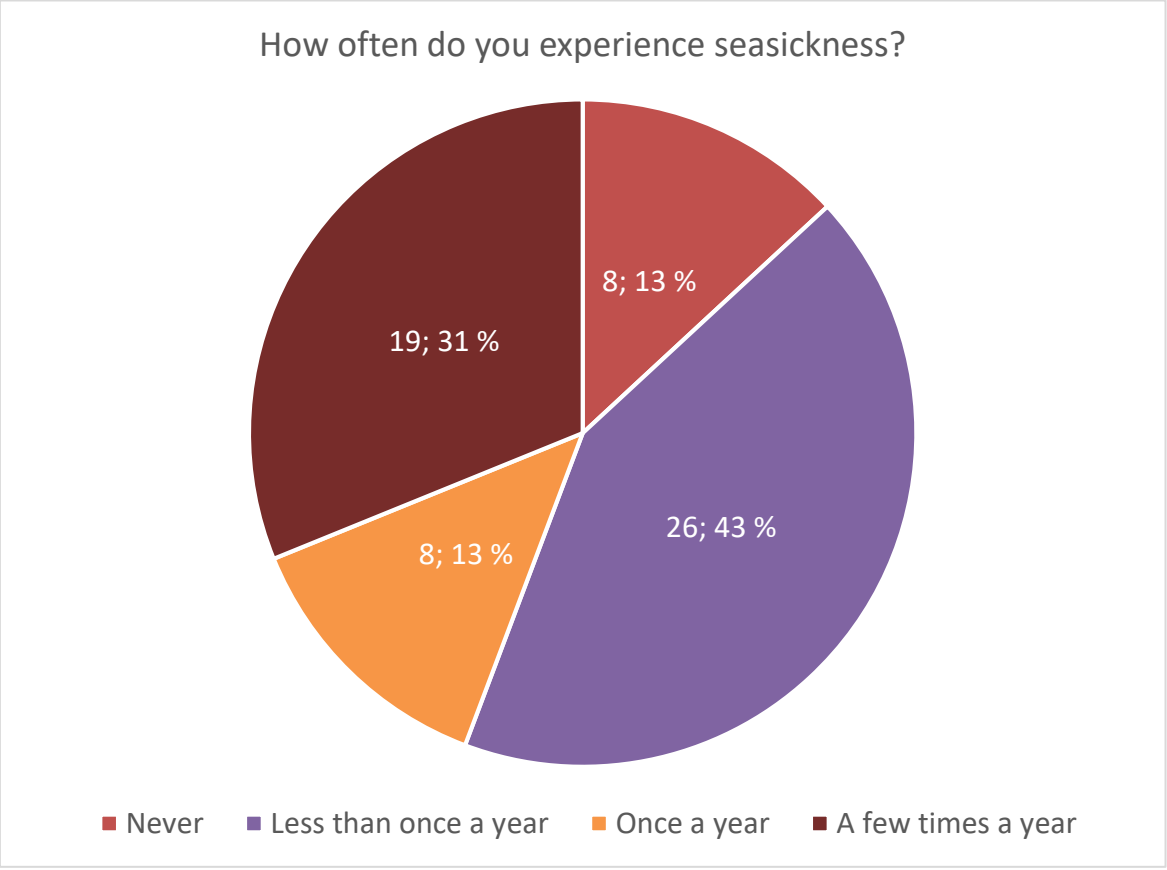

Table 4 Frequency of seasickness

7.2.3 Symptoms

The most common symptom that was experienced was general fatigue with 25 out of 61 suffering from it (41%). The second most common symptoms were sweating and paleness with both having 22 out of 61 responses (36%). Although sweating and paleness could have been included in fatigue, it seemed important at the time to separate them from each other. The third most common symptom is a headache. I did not specify in this section whether it was a strong or mild headache since they seem quite individual. 16 out of 61 (26%) respondents had vomited while seasick. 11 (18%) experienced stomach cramps, 6 (10%) anxiety, 4 (7%) had poor coordination and 5 (8%) had other symptoms not listed in this survey.

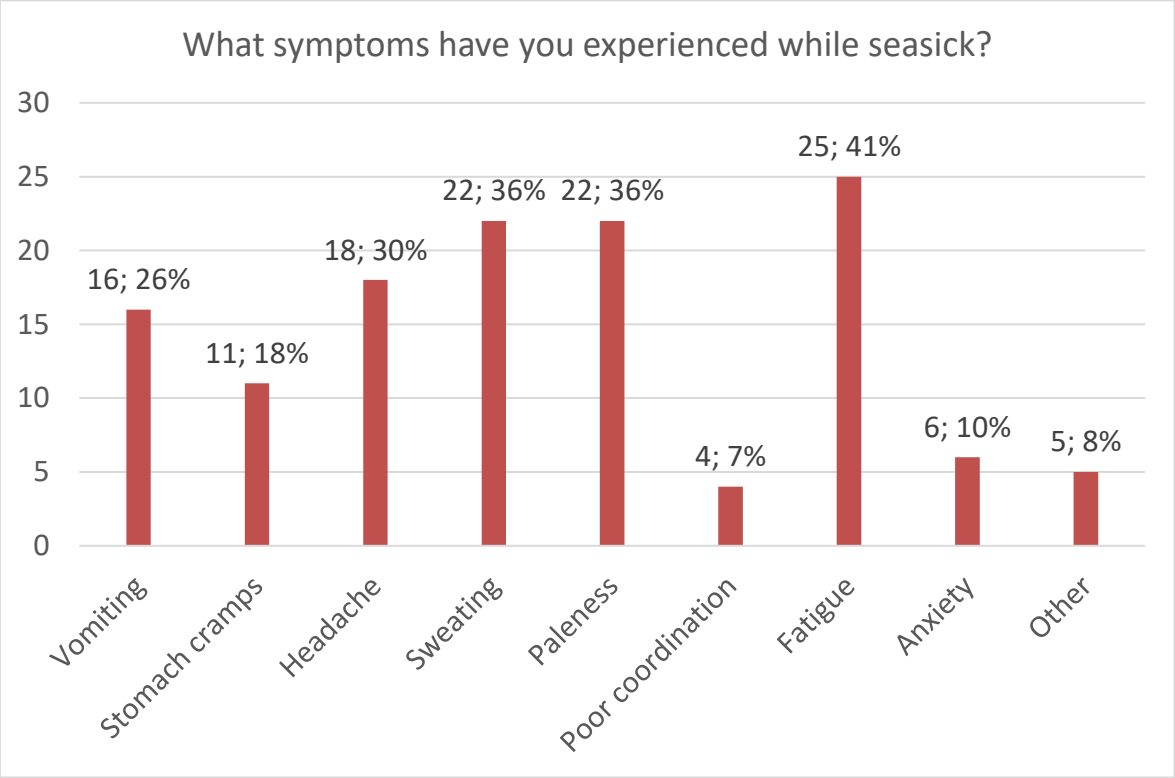

Table 5 Symptoms

7.2.4 Effect on Work

6 out of 61 (10%) were at some point so seasick, that they were not able to perform in their regular duties on board. 7 out of 61 (11%) felt that while sick, they are only able to do light work whereas 23 out of 61 (38%) were able to do most of their work. Quite surprisingly only 42% (26/61) of all respondents were able to fully perform in their duties on board without the sickness affecting their work.

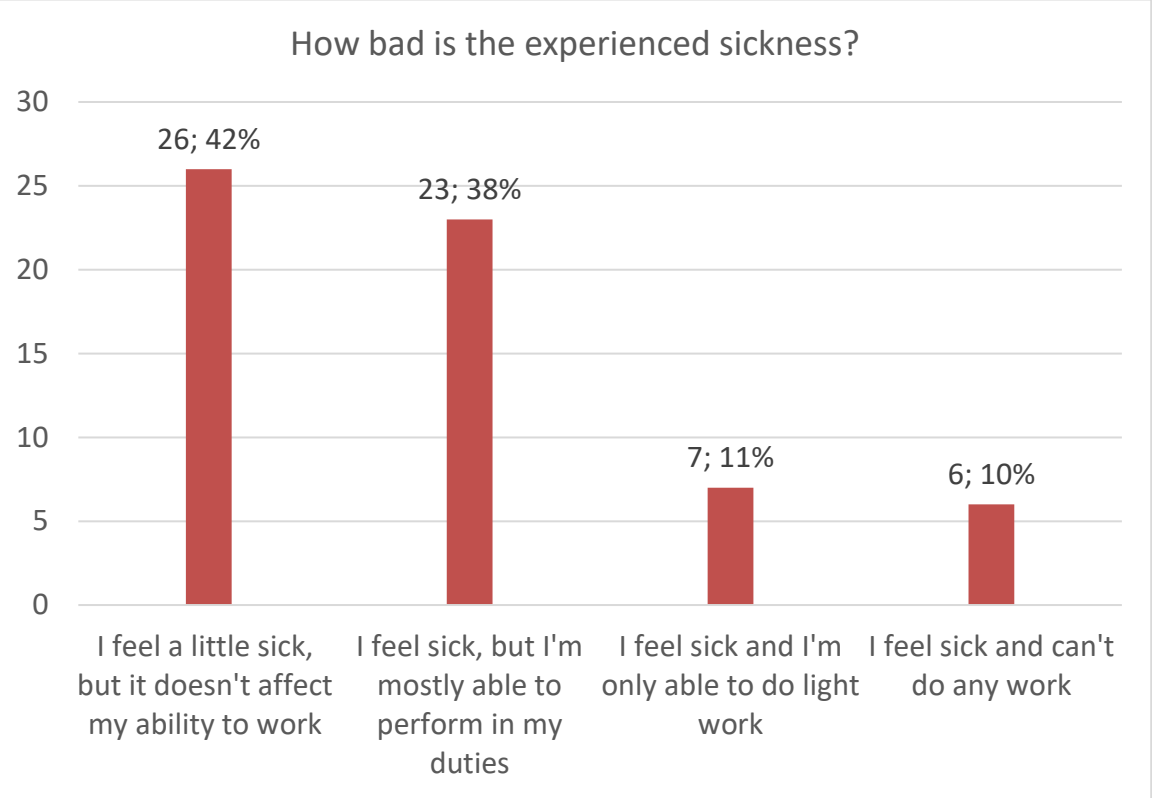

Table 6 Work

7.3 Prevention and treatment

7.3.1 Without medication

One of the questions in the survey was "What do you do to prevent or treat seasickness other than medication?". The respondents were able to write in their own words how they are treating their seasickness. Multiple choice questions wouldn't have been efficient enough to cover all the possibilities.

Clearly the most common ways for them to treat their seasickness were: Sleeping/resting, getting fresh air, going outside or to the bridge to see the horizon, drinking fluids (water, coke,tea), try not to think about it and keeping yourself busy, eating something.

Some even suggested drinking small amounts of alcohol, while others even try to avoid caffeine. It was also said to avoid being in certain parts of the vessel and find a calmer area.

7.3.2 Medication

Approximately 72% (44/61) had never taken any medication for their seasickness. 13 (21%) had taken Meclizine(Postafen), 6 (10%) had taken Cyclizine(Marzine), 1 (2%) had used Scopolamine hydrobromide(Scopoderm) and 3 (5%) had used some other medicine.

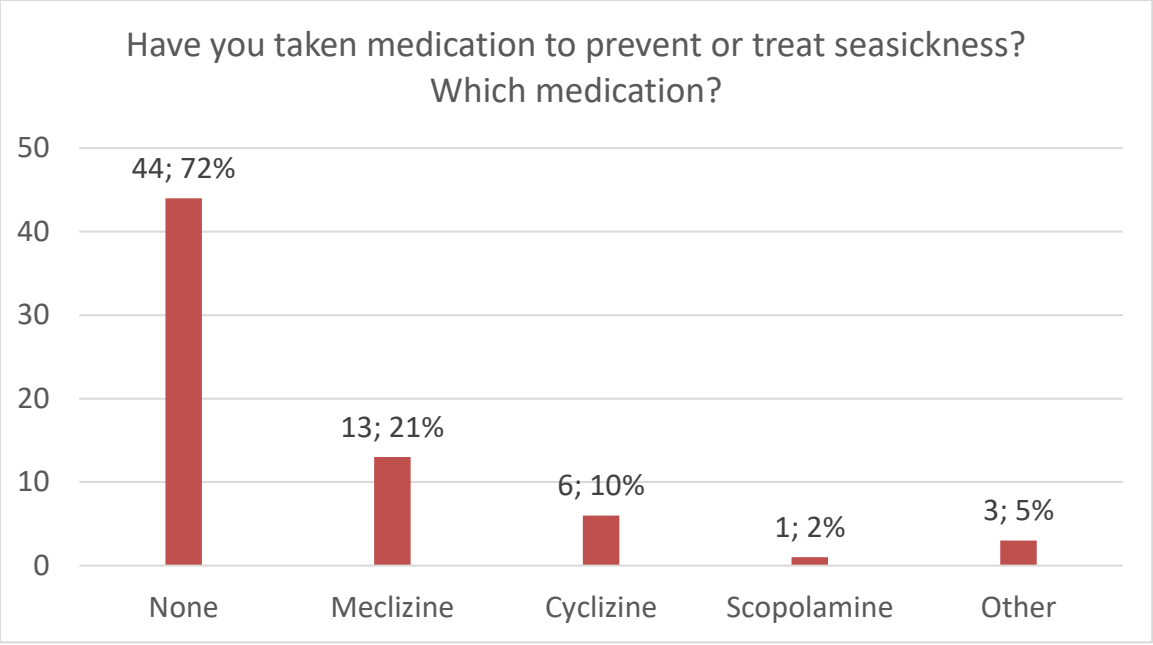

Table 7 Different medications

7.4 Conditions

The size or type of the vessel doesn't seem to matter in case of seasickness. Vessel sizes from 3m up to 200m are mentioned with and without stabilizers. Although most of the responses mention small vessels with less than 100m LOA. Both sailing and flat bottom ships were mentioned. Ro-Ro, Tanker, General Cargo, Bulker, Passenger Ferry, Tug, Military Vessel, Container Ship, Motor Yacht, Sailing Yacht and Motor Boat.

Sailing area doesn't seem to matter since seasickness was experienced all around the world; Baltic Sea, North Sea, Indian Ocean, Atlantic Ocean.

The only common factor all respondents seemed to have had was rough sea, hard wind and hard rolling when experiencing seasickness. With wind starting from 15 m/s up to 35 m/s and wave height of as small as 1,5m.

7.5 Colleagues

According to the responses, 46 (75%) have met or worked with 2 or more persons who get regularly seasick. 9 (15%) know one person and 6 (10%) don't know anyone who would get seasick. This means that 55 (90%) know at least one person who does get seasick. From this we can assume that seasickness is in fact quite commonly experienced amongst professional sailors.

Connected to the previous question, one was made to find out in which extent the colleagues were experiencing seasickness. Only 12 (20%) found that they were fully able to perform with their duties on board. 31 (51%) answered that the colleagues were mostly able to do their job while 15 (25%) said them to only do light work. 6 (10%) found that those they had worked with weren't able to do their job at all.

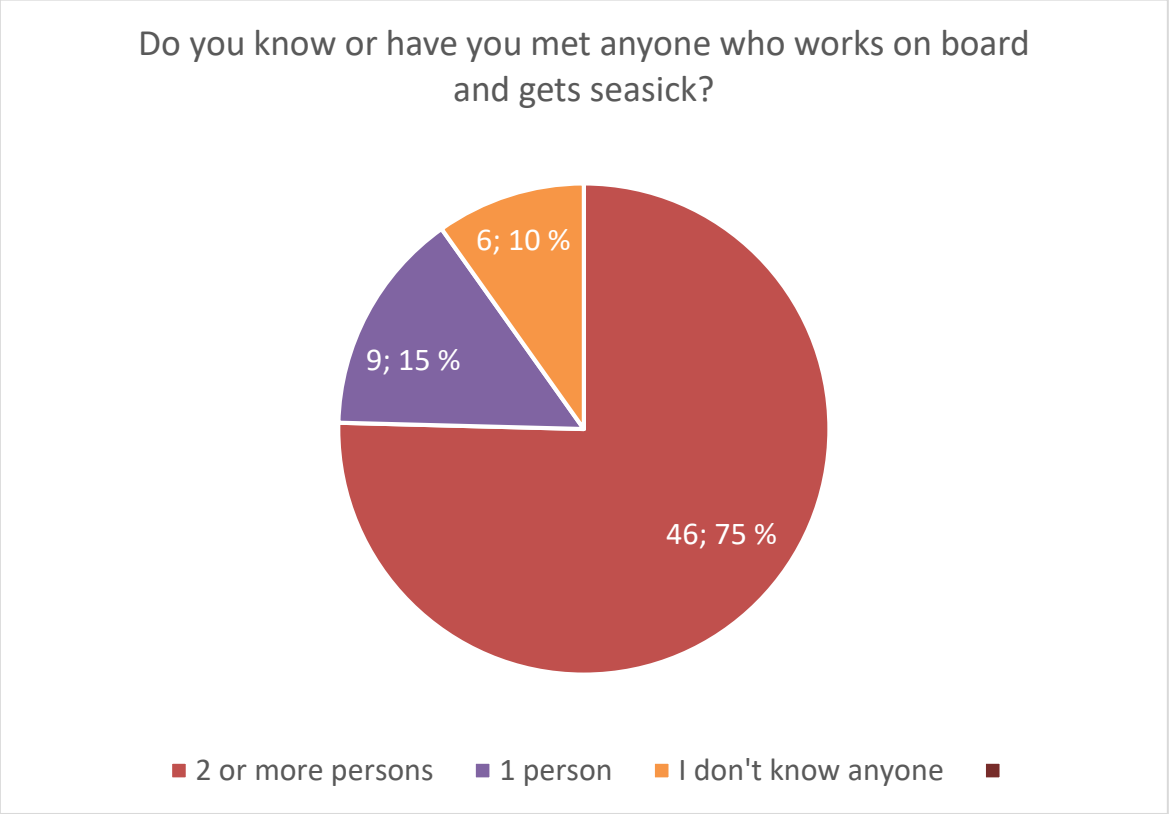

Table 8 Number of colleagues

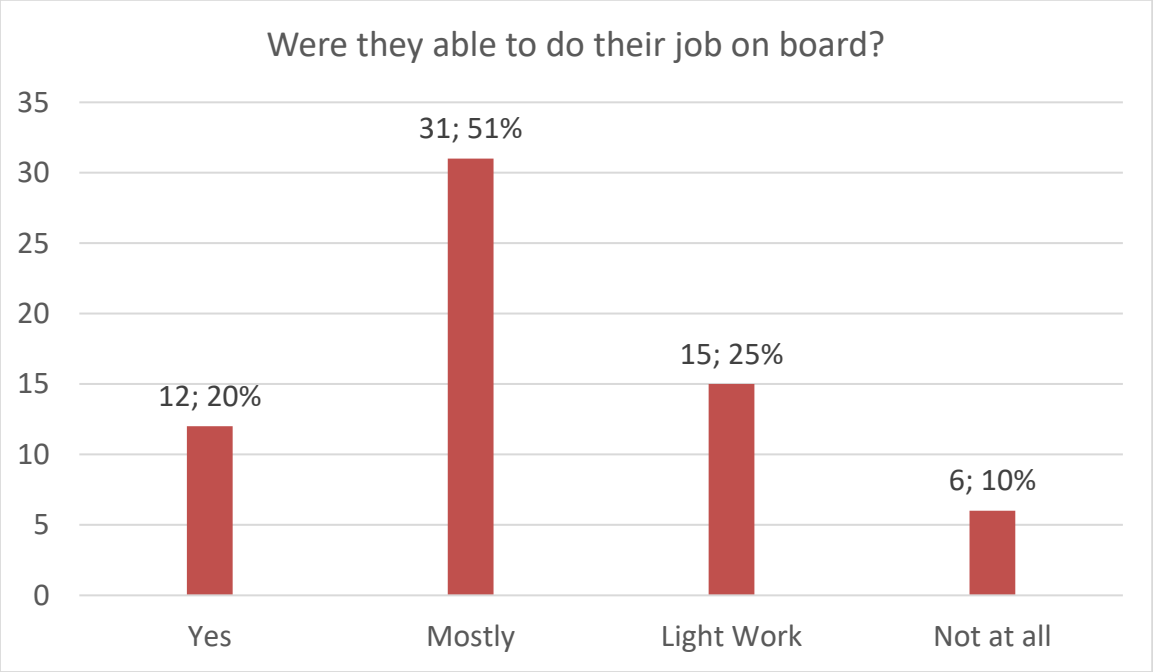

Table 9 Performance

8 Conclusion, Critical examination and Discussion

The research questions as mentioned in chapter "1.1 Objective & Research Questions" were;

1. How many of the less experienced seafarers experience seasickness?
2. How does it affect them and are they able to work?
3. How to prevent and treat seasickness?
4. What medication is most commonly used in Finland?
5. Does previous sailing or boating experience have an effect on seasickness?
6. How common is seasickness outside of the focus group?

It now seems clear that a large group (79%) of new students or seafarers suffer from seasickness. Some (10%) even to the extent of not being able to work at all. Luckily there are plenty of different ways to treat it or totally prevent it by acting in ample time.

8.1 Experience

More responses could have been gathered from those with less than 100 days of experience but since most of them were informed about the questionnaire, I don't believe there is much more that could have been done to gather responses from this group.

Different experience levels were gathered to find out if there could be found a difference between them and the results were quite surprising when there wasn't a real difference. 25 out of 29(86%) respondents with more than 300 days of experience working at sea were still getting seasick and so did 19 out of 24(79%) respondents with 100 – 300 days of experience. Those with less than 100 days of experience had a more evenly distributed result where 4 out of 8(50%) were getting seasick.

The amount of responses from seafarers with less than 100 days of experience is not high enough to make any real conclusions from whether more of them get seasick than the others. Though with these results we can assume that having this much more experience doesn't affect whether you get seasick or not.

One could compare these results with an equally large focus group outside of the maritime industry, but that is not one of the focus points of this thesis.

8.2 Previous boating/sailing experience in correlation with seasickness

To find out whether previous boating/sailing experience could have something to do with seasickness, individual responses had to be read and data gathered manually.

The research shows, that 40 out of 61 (65%) had previous boating or sailing experience but were still getting seasick. Only 12 (20%) who had previous experience in those areas were not getting seasick.

From these figures, we can be quite certain that many seafarers with previous experiences in boating and sailing are still getting seasick and might not have an effect as large as assumed when starting this thesis.

Sailing and boating is a seasonal hobby, and most of them only practice it during summer months when the weather is good, while the worst weather with hard wind is experienced during fall and spring when people are not too eager to go out. This could explain the results gotten from the respondents. Another theory is that even if they would've been sailing in bad conditions, they're still spending the majority of their time ashore and the body gets used to it by the time they go out to sea again.

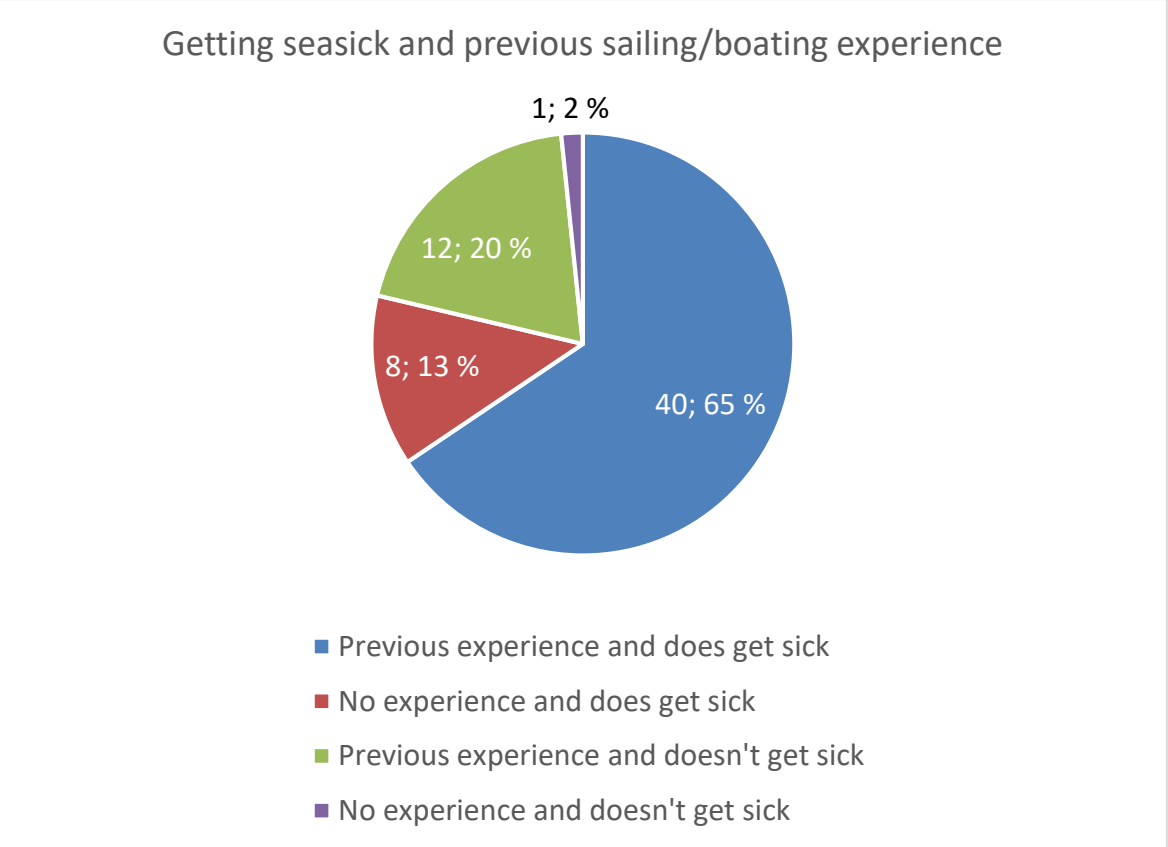

Table 10 Previous experience and sickness

8.3 Experience in correlation with severity of sickness

Finding out whether there is a difference in the severity of seasickness in correlation with the seafarers experience at sea seemed important to this study. But just like in the previous chapter, there wasn't a huge difference.

In 26 out of 62(42%) cases of seasickness, the severity was so minor that it didn't affect their ability to work. Since there was only a total of 6 cases of seasickness amongst the seafarers with less than 100 days of experience their effect in this matter is marginal and in the rest of the cases it was an even 50-50 between those with over 300 days and those with 100 – 300 days. Even in severe cases of seasickness the ones with more experience at sea didn't suffer less nor milder sicknesses.

It seems like experience does not make a huge difference between these groups of respondents after all.

8.4 Frequency

From the responses, you can clearly see that the respondents are not getting seasick too often and this can be partly explained by the fact that an average sailor isn't spending a full year at sea. On Finnish vessels, the usual seafarer spends half of the year at work and half at home with different rotation lengths (e.g. 1 month/week on board – 1 month/week ashore), although some variation is not impossible. In addition to this, the respondents are students at UAS Novia and their school year lasts from September to next year's May.

8.5 Credibility of the Results

To get a credible result on any quantitative study, the amount of responses is crucial. The more responses, the more accurate are the results. But if your focus group is small, you need a bigger percentage of respondents than if your focus group would be large to haven accurate results. This study having a quite small focus group, I believe more responses should have been gathered to get an absolute result. Having said that, I think this study is pointing us into the right direction.

To get an even more accurate result, the survey could have been sent to various seafaring schools and companies hoping for more responses.

8.6 Problems

8.6.1 Questionnaire

Getting enough responses is critical to every research based on surveys. Most of the responses were gathered within 2 days of sending it out and no new responses were registered for over a week. Having had experience as chairman working for the student union ENÅ, I had some experience on how to efficiently spread the word to students at UAS Novia. E-mails were not an option knowing they are always filled with spam mail and are only used when all else fails. I chose to use our student union's Facebook page since Facebook is used almost daily nowadays and it worked perfectly. 61 responses were gathered quite fast but that is where it stayed. In addition to Facebook, I contacted at least one class representative from each year to spread the survey to their classmates.

8.6.2 Material

Using Google, basic material for the theory part was quite easily found. Finding proper academic material on the other hand got harder since there was so much of the other and most of the academic studies got lost in the masses.

8.7 Future

I believe seasickness should be discussed more with the new students who are just starting their career at sea to keep them motivated with their studies and not quitting after their first bad experience with seasickness. Seasickness is treatable, and as found out with the questionnaire, not occurring too often. In the worst cases (31% of all respondents) some suffer from it only a few times a year.

After all, seasickness seems to be quite common on board Finnish vessels. According to the responses, 90% know at least one person who does get seasick.

In the future, this study could be done on a larger scale e.g. companies, all seafaring schools, Finnish fleet etc. This might be an interest to Finnish seafaring unions or healthcare professionals to find deeper causes to seasickness and different treatment methods.

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9.1 Figure Sources

Figure 1: https://en.wikipedia.org/wiki/Inner_ear#/media/File%3ABlausen_0329_EarAnatomy_InternalEar.png (Accessed 15.11.2016)

Figure 2: https://en.wikipedia.org/wiki/Meclizine#/media/File%3AMeclizine.svg (Accessed 15.11.2016)

Figure 3: https://en.wikipedia.org/wiki/File:Cyclizine2DCSD.svg (Accessed 15.11.2016)

Figure 4: https://en.wikipedia.org/wiki/Hyoscine_hydrobromide#/media/File%3AL-Scopolamin.svg (Accessed 15.11.2016)

10 Appendices

10.1 Appendix I: Questionnaire

Study on sea sickness

I am gathering responses for my Bachelor Thesis in Marine technology about sea sickness experienced by students or fairly new seafarers (approximately 5 years max.) with at least 60 days experience at sea.

If you don't have the answer, give an approximate answer or leave blank.

*Required

How much experience do you have working onboard a vessel? *
Both practice and work are acceptable.

- ◯ less than 100 days
- ◯ 100 - 300 days
- ◯ More than 300 days

Do you get or have you ever gotten sea sick? *

- ◯ Yes
- ◯ No

Have you had any previous experience in sailing/boating before beginning your career at sea? *

- ◯ I have been sailing/boating for a long time
- ◯ Some sailing/boating experience
- ◯ No previous experience

How often do you experience sea sickness? *

Pick the closest answer. Weather conditions and other factors come later on during the survey.

- ○ Never
- ○ Less than once a year
- ○ Once a year
- ○ A few times a year
- ○ Once a month
- ○ A few times a month
- ○ Almost weekly
- ○ More often

What symptoms have you experienced while sea sick?

Multiple answers allowed.

- ☐ Vomiting
- ☐ Stomach cramps
- ☐ Headache
- ☐ Sweating
- ☐ Paleness
- ☐ Poor coordination of movements
- ☐ Fatigue
- ☐ Anxiety
- ☐ Other: _____

How bad is the experienced sickness?

Multiple answers allowed.

- [ ] I feel a little sick but it doesn't affect my ability to work
- [ ] I feel sick, but I'm mostly able to perform in my duties
- [ ] I feel sick and I'm only able to do light work
- [ ] I feel sick and can't do any work

What do you do to prevent or treat sea sickness other than medication?

Your answer

Have you taken medication to prevent or treat sea sickness? Which medication? *

- [ ] None
- [ ] Postafen (Meclizine)
- [ ] Marzine (Cyclizine)
- [ ] Scopoderm (Scopolamine hydrobromide)(Patch/band-aid)
- [ ] Other: _____

What have the conditions been when you experienced sea sickness?

Ship type and size, did the vessel have stabilizers, location, weather conditions?

Your answer

Do you know or have you met anyone who works on board and gets sea sick? *

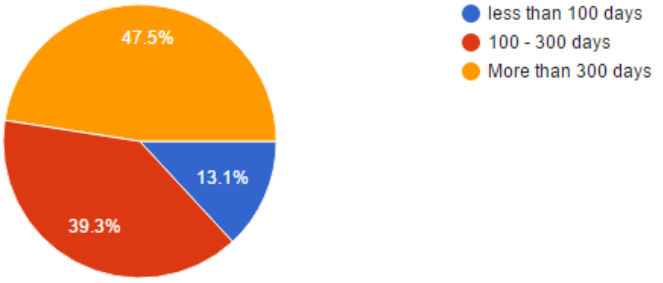
- ○ 2 or more persons
- ○ 1 person
- ○ I don't know anyone who gets sea sick

Were they able to do their job onboard?

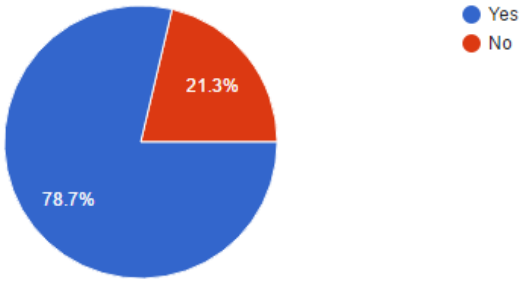
- ☐ Yes
- ☐ Mostly
- ☐ Only light work
- ☐ Not at all

10.2 Appendix II: Responses

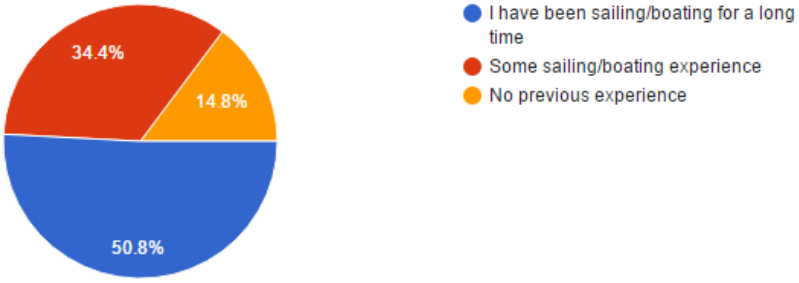
How much experience do you have working onboard a vessel? (61 responses)



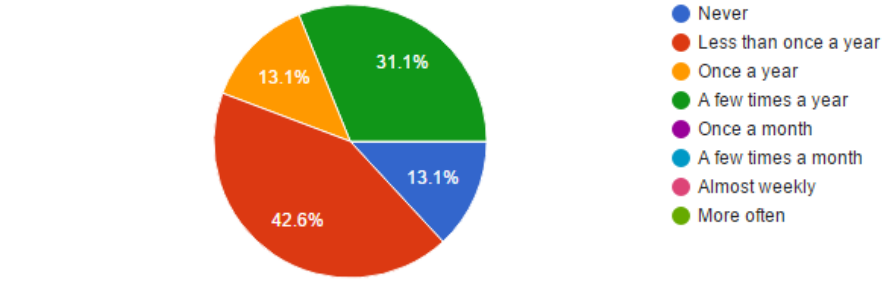
Do you get or have you ever gotten sea sick? (61 responses)



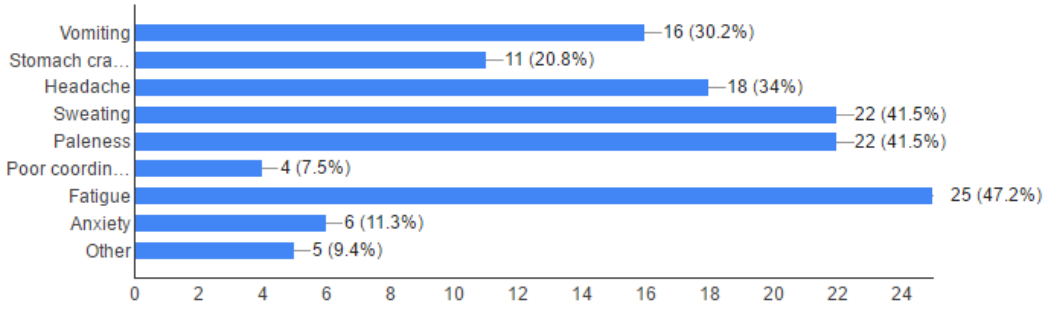
Have you had any previous experience in sailing/boating before beginning your career at sea?
(61 responses)



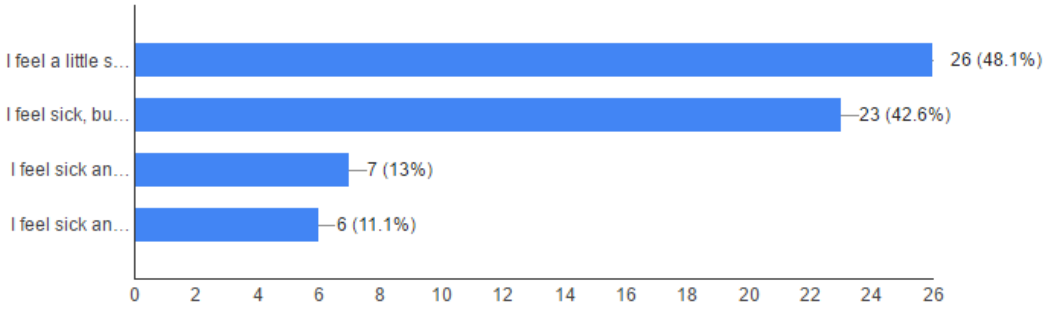
How often do you experience sea sickness? (61 responses)



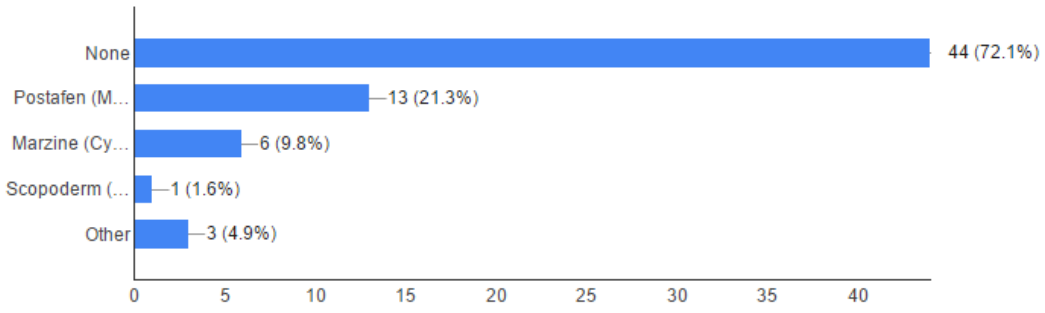
What symptoms have you experienced while sea sick? (53 responses)



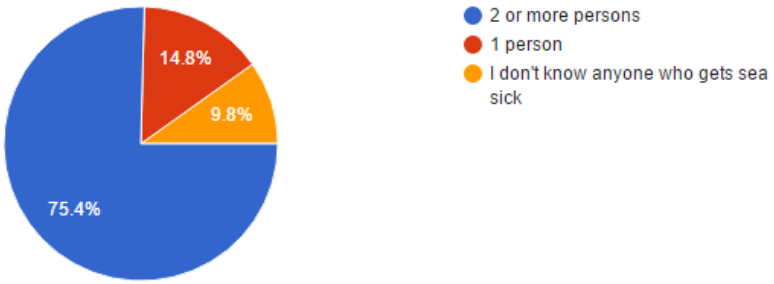
How bad is the experienced sickness? (54 responses)



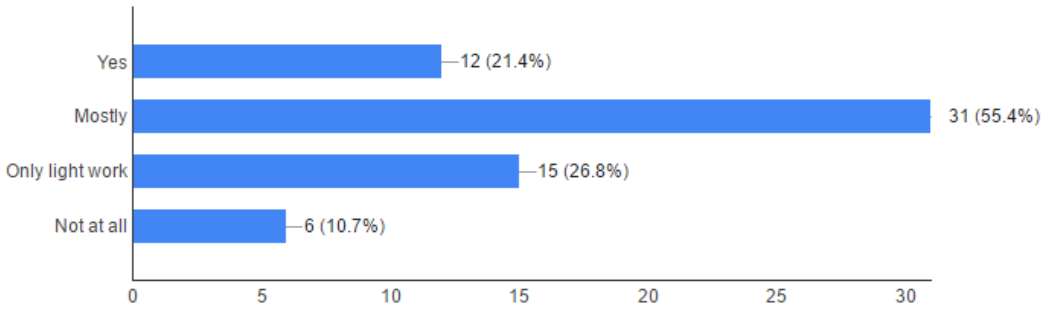
Have you taken medication to prevent or treat sea sickness? Which medication?
(61 responses)



Do you know or have you met anyone who works on board and gets sea sick?
(61 responses)



Were they able to do their job onboard? (56 responses)



What have the conditions been when you experienced sea sickness?

(44 responses)

Flat bottom ship, 15 degrees rolling from side to side
Rough seas. Big swells and windy. Cargo,cruise, yacht, sail boat. With stabs and without. Sizes between 20-200m
Ro-ro cargo, almost 200m, stabilizers out. Summer Biscay, looking lovely but rolling like hell. 2nd Biscay voyage was perfectly still, however
Military vessel. LOA 78m. Late autumn. No stabilizers. Baltic sea. Poor weather
Severe weather general cargo vessel without stabilizers
Small tonnage cargo vessel, rough sea, paint smell, Baltic sea
On small vessels with 100m and less, wind over 15m/s. Baltic and north sea.
depends a lot, ususally I get a little seasick every time I come to a new ship, before I learn its movements in heavy sea. All kind of different boats/vessels/yachts from about 3 - 200 m length, with and without stabilizers (the stamping is the worst for me so stabs don't really matter :D)
I haven't experienced sea sickness since I started my career at sea so I don't remember the vessel details.
When it's just blowing up and the waves are shorter. Big waves is no problem. But the baltic sea isn't a nice place when windy
Rough sea, small vessel, north sea, no stabilizers
89 meter small tonnage vessel, in ballast, outside of hanko, weather 25 m/s wind top 32m/s
40m sailing yacht, Atlantic ocean, small storm, 8m waves
different boats and ships
120m general cargo vessel and roro vessel. North sea, winter time, heavy seas.
Small ship, certain type of rolling.
Containership 966teu, no stabilizers, North sea, hard side wind heavy rolling.
Rough weather, baltic sea and indian ocean, also foggy weather, baltic sea
Small vessels and bad weather..
Rough sea, heavy wind. Roro vessel about 150m. Baltic sea.
Small cargo vessel, no stabilizers, rolling on open sea, in the Baltic region.
10 meter motor boat. Rough sea. I was trying to sleep and got little bit sick.
Roro 160m, north sea
Small tanker (Tankos 60m) fully loaded with a 20-25 m/s headwind on the northern baltic sea. No stabilizers available.
Passanger ferry, finnish gulf, 25m/s
rough weather, all sizes of ships, 10m long fishing vessels, 15m long military vessels and cargo ships in the range between 65m-180m
Small tug, no more than 1,5m waves, pitch dark

haven't gotten sea sick even in storms.
Small tonnage rolling in baltic sea
No stabz old sea
Small vessels
Rough sea, small bulker, got seasick while beeing in the cargo hold
L; 270m baltic sea 20 m/s
RoRo vessel, 188 meters with stabilizers, bay of biscay, hard wind approximately 6-8 meters in wave height
storm
North sea, big waves and a lot of wind. Ship approximately 140 m container ship.
Swell after yesterday's storm.
Heavy weather conditions
Roro vessel, quite thin compared to it's lenght, biskaya gulf, no stabilazors, first training period, sunny but windy day, I was also "dehydrated".
When I was so seasick that I could not do anything I was working on Africa Mercy (no stabilizers, flat bottom and rolling 20 degrees) in South African coast. There was some wind but not storm.
Rough seas.
70m, military auxillary vessel, no stabilisers, 3m waves abreast
rough seas
Unpredictable high GM rolling and simultaneous pitching

What do you do to prevent or treat sea sickness other than medication?

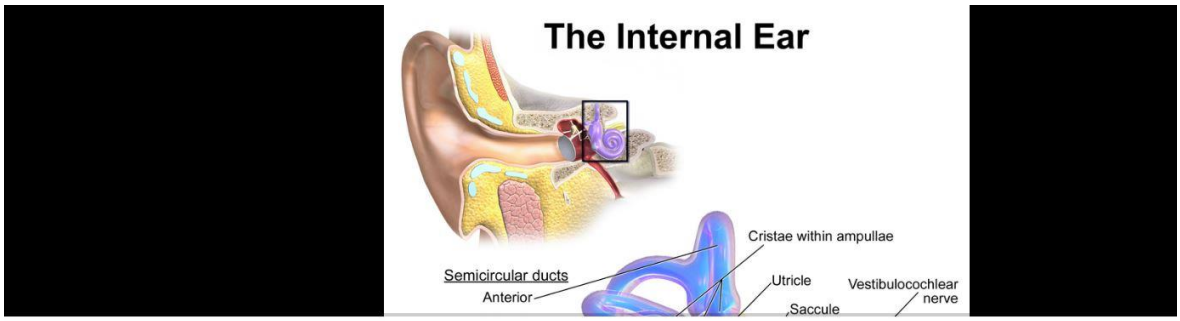
(39 responses)

Sleep
Sleep
Sleep
Hydration, avoiding excess caffeine, fresh air
Eat less, sleep more
Try not to think about it
Lots of solid food
Breath fresh air, look to the horizon, drink water not coffee
Eat and drink small amounts constantly and keep myself busy. Hanging out on the bridge or deck helps.
sleep, try not to do unnecessary things, drink beer (but not get hangover), drink and eat properly, stare at the horizon (if yachting), take POSTAFEN if it's really bad
Staying outside
Puke. Eat crackers. Suger cracker are the best. And drink water or green tea
Drink water and go to bed
Look over horizon
work rather than wonder the sickness
Fresh air

Drink alcohol
Seeing the horizon
Drinking water or similar
Treat resting in a dark room with Coca-cola.
Fluids
Eating a banana, lie down, focus on looking towards the horizon
Watching out to the horizon helps or just looking out to see the movement.
Eat bread
Nothing. I've only experienced it once while I had fever so I guess I was weak to begin with.
Concentrate
try to work on deck
enough sleep, hydration, nutrition and fresh air
Nothing
Eat salty food
Sleeping if possible
I try to go somewhere where I'm able to see outside like the bridge
lie down, sleep
Stay outside as much as possible

Keep on working to keep my mind off the sickness.
Try to sleap
Try to avoid being in certain parts of the vessel (e.g. under deck in the forward part of the vessel). Fresh air, water, keeping my eyes on the horizon, laying in bed.
Look at the horizon
Eat and sleep well

10.3 Appendix III: Image copyrights



Internal Ear Anatomy. See a related animation of this medical topic.