Consumption of prescribed analgesics by chronic pain patients in the Norwegian society: investigation of pharmacophobia and pharmacophilia

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Introduction

- Pharmacophobia is defined as the negative attitude towards medication use, where patients show irrational fear of drug implications that further results in relatively low adherence[1]. In terms of analgesic use, it can be termed Analgophobia where the attitude might be based on fear of becoming dependent or addicted to analgesics[2].

- Pharmacophilia is present when patients have high tendencies towards use of medications[3], for example in terms of pain killers, it would be over consumption of analgesics (analgophilia)[2] that may result in drug induced complications, such as toxicity.

- Patterns of analgesic usage have been studied around the globe, including Norway[4]. However, information is limited about patients' attitude and trends (analgophobia and analgophilia) for consumption of prescribed pain medication in Norway.

[1]Petelinšek A, Lauri Korajlija A. Predictors of pharmacophobia. Health Psychol Res. 2020 May 26;8(1):8853.
[2]Gazerani P. Pharmacophobia and pharmacophilia in analgesic use. Pain Manag. 2017 Sep;7(5):341-344.
[3]De Las Cuevas C, Peñate W. Explaining pharmacophobia and pharmacophilia in psychiatric patients: relationship with treatment adherence. Hum Psychopharmacol. 2015 Sep;30(5):377-83.
[4]Samuelsen PJ, Slørdal L, Mathisen UD, Eggen AE. Analgesic use in a Norwegian general population: change over time and high-risk use--The Tromsø Study. BMC Pharmacol Toxicol. 2015 Jun 6;16:16.

Aims

- This study investigated attitudes towards the use of prescribed pain medication and influential factors among chronic pain patients in Norway.

- The ultimate goal was to identify trends and attitudes for a better understanding of analgophobia and analgophilia phenomena for guiding an optimal adherence among patients with chronic pain.

Methods

Subjects
- Participants were adults (>18 years) living in Norway with chronic pain using prescribed analgesics.

Design
- A cross-sectional study with the aid of an online survey was conducted in spring 2021.

Tools
- Demographic characteristics together with analgesic use were collected, where the BMQ (The Beliefs about Medicines Questionnaire) and MARS-5 (The Medication Adherence Report Scale) were used.

Statistical analysis
- The IBM SPSS Statistics V.21.0 was employed. Descriptive statistics were attained to present frequencies (%) and means-(SD).

- Comparisons were performed by Chi-square, Independent sample t-tests, or Mann-Whitney to determine if a significant difference existed between participants' answers to BMQ and MARS-5 instruments.

- We also attempted to identify if different factors are associated with each other.

Questionnaire

The questionnaire was divided into 2 sections:
- The initial section: a set of questions that dealt with demographics (age, gender, level of education) and relevant participant data (duration of pain, class of prescribed drugs used, etc.).

- The second section: the Norwegian translation of the standard instruments: The Belief about Medicines Questionnaire[5] (BMQ, © Professor Rob Horne) and the Medication Adherence Report Scale[6] (MARS-5, © Professor Rob Horne). *Permission for the use of these instruments was granted by the developer, Professor Rob Horne.*

- The questionnaire was constructed on the Nettskjema.no , a website that provides the tools necessary for the creation of online surveys and facilitates the registration and export of data acquired from the participants to spreadsheets.

- Two pilots were run to assess the difficulty of the questions and in order to detect any obscurities and technical issues. After the consummation of the pilot runs, necessary adjustments were made, and the final questionnaire became ready.

- The online questionnaire was available to willing participants for 10 days via the Facebook. Participation was voluntary and anonymous.

[5] Robert Horne, John Weinman & Maittew Hankins. The beliefs about medicines questionnaire: The development and evaluation of a new method for assessing the cognitive representation of medication, Psychology & Health, 1999, 14:1, 1-24.
[6] Chan AHY, Horne R, Hankins M, Chisari C. The Medication Adherence Report Scale: A measurement tool for eliciting patients' reports of nonadherence. Br J Clin Pharmacol. 2020 Jul;86(7):1281-1288.

Results - Sociodemographic

148 participants completed the survey. There was no missing data.

Age (Years)	
18 – 40	49(33.1%)
41 – 55	74(50%)
Over 55	25(16.9%)
Gender	
Male	16(10.8%)
Female	132(89.2%)
Education	
Middle school	16(10.8%)
High School	79(53.4%)
College / University	53(35.8%)
Duration of pain (Months)	
3 – 6	1(0.7%)
6 – 12	2(1.4%)
12 – 18	2(1.4%)
Over 18	143(96.6%)
Chronic pain condition	
Headache / Migraine	49(33.1%)
Muscular and/or joint pain	118(79.7%)
Back pain	69(46.6%)
Other	66(44.6%)
Class of prescribed analgesics	
High dose of nonsteroidal anti-inflammatory drugs	69(46.6%)
Combination opioids	55(37.2%)
Opioids	96(64.9%)
Other	45(30.4%)
Main concerns with the use of prescribed analgesics	
Side-effects	77(52%)
Dependency/addiction	78(52.7%)
Lack of effect	86(58.1%)
Nothing	11(7.4%)
Do you use your pain killers preventatively when you think you will experience pain?	
Yes	40(27%)
No	108(73%)
Do you take more doses than recommended by your doctor if the pain persists?	
Yes	28(18.9%)
No	120(81.1%)
How much do you know about your prescribed pain killers?	
Very much	53(35.8%)
Much	74(50%)
Unsure	6(4.1%)
A little	10(6.8%)
Very little	5(3.4%)

Results – BMQ attitude analysis

The attitudinal analysis was based on the participants scores on the BMQ-instruments. Most of the participants (60.8%) were "Accepting," followed by the "Ambivalent" group that constituted 32.4%. The minority of the patients were classified as being "Skeptical" (4.1%) and "Indifferent" (2.7%).

Attitude	Frequency	Percent
Accepting	90	60.8
Ambivalent	48	32.4
Indifferent	4	2.7
Skeptical	6	4.1
Total	148	100

BMQ, Demographics, Attitudinal groups and comparisons are presented below.

Chi-square							
Variables	Item #	Harm	Overuse	Necessity	Concern	H0 (Alfa - 0.05)	Results
Age groups	Q1	2.925(0.939)	6.047(0.642)	4.953(0.763)	15.019(0.059)	No difference in the answers of the different age groups	H0 is retained in all items on all the subscales
	Q2	4.868(0.772)	7.972(0.436)	9.303(0.317)	3.848(0.871)		
	Q3	7.790(0.254)	12.420(0.133)	13.428(0.098)	9.308(0.317)		
	Q4	11.488(0.176)	2.354(0.968)	4.525(0.807)	8.861(0.354)		
	Q5			6.121(0.634)	6.749(0.544)		
	Q6				4.293(0.830)		
Education Level	Q1	10.479(0.233)	3.317(0.913)	8.788(0.361)	9.876(0.274)	No difference in the answers of the different education level groups	H0 is retained in all the subscales except for Q3-Overuse Where H0 is rejected
	Q2	5.064(0.751)	1.651(0.990)	5.758(0.674)	7.407(0.493)		
	Q3	3.250(0.777)	16.775(0.033)	6.566(0.584)	14.623(0.067)		
	Q4	5.935(0.655)	7.525(0.481)	4.502(0.809)	10.793(0.214)		
	Q5			3.876(0.868)	5.238(0.732)		
	Q6				15.096(0.057)		
Gender	Q1	2.292(0.682)	3.855(0.426)	0.787(0.940)	1.012(0.908)	No difference between the answers of male and female participants	H0 is retained in all items on all subscales
	Q2	1.702(0.790)	6.345(0.175)	3.260(0.514)	4.373(0.358)		
	Q3	3.336(0.343)	2.873(0.579)	2.175(0.704)	4.159(0.385)		
	Q4	1.463(0.833)	2.681(0.613)	2.460(0.652)	8.035(0.090)		
	Q5			1.896(0.755)	0.458(0.977)		
	Q6				2.754(0.60)		
Attitudinal groups	Q1	33.335(<0.001)	33.819(0.022)	122.479(<0.001)	5.546(<0.001)	No difference between the answers of the different attitudinal groups	H0 is rejected in all items of the subscales except for Q4 of both General- Harm & General-Overuse
	Q2	27.424(0.007)	23.638(0.023)	89.300(<0.001)	54.845(<0.001)		
	Q3	18.104(0.034)	24.035(0.020)	94.189(<0.001)	31.238(<0.002)		
	Q4	20.17(0.065)	14.771(<0.001)	84.771(<0.001)	71.584(<0.001)		
	Q5			35.425(<0.001)	60.315(<0.001)		
	Q6				47.957(<0.001)		
Subscale Items		**General-Harm Subscale** Q1-People who take medicines should stop their treatment for a while every now and again. Q2-Most medicines are addictive. Q3-Medicines do more harm than good. Q4-Most medicines are poison. **General-Overuse Subscale** Q1-Doctors use too many medicines. Q2-Natural remedies are safer than medicines. Q3-Doctors place too much trust on medicines. Q4-If doctors had more time with patients, they would prescribe fewer medicines. **Specific-Necessity** Q1-My health at present depends on my medicines. Q2-My life would be impossible without my medicines. Q3-Without my medicines I would be very ill. Q4-My health in the future will depend on my medicines. Q5-My medicines protect me from becoming worse. **Specific-Concern** Q1-Having to take medicine worries me. Q2-I sometimes worry about the long-term effects of my medicine. Q3-My medicines are a mystery to me. Q4-My medicines disrupt my life. Q5-I sometimes worry about becoming too dependent on my medicines Q6-My medicines cause me unpleasant adverse effects					

When participants were categorized according to demographics (Age, Education level and Gender) there was no significant difference between the groups except for a difference between the participants in the age group 18 – 40 and >50.

However, when the participants were placed into attitudinal groups there was a significant difference between the means of the groups. The summary of attitudinal group comparison is presented here.

Sub-scale	Attitudinal Groups	H0: null hypothesis	p-value	Conclusion
General-Harm	Accepting and Ambivalent	No difference in the mean scores between the groups	<0.001	H0 is rejected
	Accepting and Skeptical	No difference in the mean scores between the groups	<0.001	H0 is rejected
	Ambivalent and Skeptical	No difference in the mean scores between the groups	0.023	H0 is rejected
Specific Necessity	Accepting and Skeptical	No difference in the mean scores between the groups	<0.001	H0 is rejected
	Accepting and indifferent	No difference in the mean scores between the groups	<0.001	H0 is rejected
	Ambivalent and indifferent	No difference in the mean scores between the groups	<0.001	H0 is rejected
	Ambivalent and Skeptical	No difference in the mean scores between the groups	<0.001	H0 is rejected

Results – MARS -5 analysis

The Chi-square test revealed that there was no significant difference in their answers on the MARS-5 scale when the participants were divided based on age group. There was a significant difference in one item when they were categorized based on level of education and gender. When the participants were grouped according to attitudinal groups, there was a significant difference in 3 of the 5 items. Results from attitudinal groups and MARS-5 analysis are presented here.

Chi-square				
Variables	Item #	MARS-5	H0 (Alfa - 0.05)	Results
Age groups	Q1	8.573(0.386)	No difference between the answers of the different age groups	H0 is retained in all items of the scale
	Q2	8.355(0.213)		
	Q3	15.766(0.46)		
	Q4	14.243(0.076)		
	Q5	8.988(0.343)		
Education Level	Q1	6.955(0.537)	No difference between the answers of the different education level groups	H0 is retained in all items of the scale except for Q4
	Q2	9.947(0.127)		
	Q3	10.038(0.262)		
	Q4	17.133(0.029)		
	Q5	8.257(0.409)		
Gender	Q1	4.962(0.291)	No difference between the answers of male and female participants	H0 is retained in all items of the scale except for Q4
	Q2	4.883(0.81)		
	Q3	6.635(0.156)		
	Q4	11.213(0.024)		
	Q5	4.222(0.377)		
Attitudinal groups	Q1	30.719(0.002)	No difference between the answers of the different attitudinal groups	H0 is rejected in all items of the scale except for Q2 and Q5
	Q2	9.838(0.364)		
	Q3	44.752(<0.001)		
	Q4	30.998(0.002)		
	Q5	20.067(0.066)		
Scale Items		**MARS-5 Scale** Q1-I forget to take my medicines Q2-I alter the dose of my medicines Q3-I stop taking my medicines for a while Q4-I decide to miss out a dose Q5-I take less than instructed		

When the participants were divided into two groups, high-adherers (scores between 20 - 25) and low adherers (scores less than 20), and their answers on the BMQ-instruments were compared, there was no significant difference in their answers on the Specific-Concern, but a significant difference was present in one item of both the General-Harm and General-Overuse. The most prominent difference was present in the Specific-Necessity, where there was a significant difference in 4 out of 5 items. 80 (54.1%) of the participants were presented as high-adherers and 68 (45.9%) were low-adherers.

Results – Correlational analysis

- The correlation analysis revealed that there is a positive correlation between the participants' beliefs about harm and concern and between concern and overuse. Their beliefs about necessity were negatively correlated with their beliefs about overuse and harm. Lastly, their adherence level was positively correlated to their beliefs about necessity and negatively correlated with their beliefs about overuse and harm.

- Analysis for association between factors of MARS-5 and BMQ showed a correlation between adherence and overuse (Pearson, P<0.001), adherence and harm (Pearson, P<0.001), adherence and necessity (Pearson, P<0.001), but no correlation between adherence and concern (Pearson, P=0.403).

Conclusions

- Demographic variables such as age, gender, and educational level did not seem to critically influence the participants' perspective about the use of analgesics.

- 80 (54.1%) participants were high-adherers and 68 (45.9%) were low-adherers.

- There was a clear difference in the adherence level of the attitudinal groups (Accepting, Ambivalent, Skeptical, Indifferent) where their beliefs about the necessity of their medications were the most determinant factor for non-adherence.

Study Limitations and Future Perspectives

Two variables were not included in this study:
- Comorbidity
- Psychiatric disorders

Several studies have assessed the impact of these factors on adherence[7,8].

This study opens up many new opportunities for related research in the future:

- Further investigations can be done to determine other demographic and socio-economic variables that could make a significant difference (e.g. ethnicity).
- Factors such as comorbidities, and polypharmacy in a relatively large sample would assist in creating a more accurate representation of the tendencies and beliefs present in the society.
- A comparison between opioids and non-opioid analgesics can identify whether attitude is different when it comes to type of analgesics.
- Routine follow-ups or an automated application i.e., remote monitoring (e.g. apps on smart devices) may help retain of adherence.

[7]Saadat Z, Nikdoust F, Aerab-Sheibani H, Bahremand M, Shobeiri E, Saadat H, et al. Adherence to Antihypertensives in Patients With Comorbid Condition. Nephrourol Mon. 2015;7(4):e29863.
[8]Chapman SC, Horne R. Medication nonadherence and psychiatry. Curr Opin Psychiatry. 2013;26(5):446-52.