

Original Article

Determination of Fear of Injections and Factors Affecting the Fear of Injections in Adults: A Descriptive Study

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Abstract

Background: The injection can be an unpleasant experience for individuals. Fear of injections can result in many adverse outcomes in the life process.

Aim: This study aimed to determine fear of injections and the factors affecting the fear of injections in adults.

Methods: The sample of this descriptive study consisted of 196 individuals. The study was conducted between January and February 2020 in the outpatient injection clinic of a state hospital. Data were collected by using a questionnaire and the Fear of Pain Questionnaire-III.

Results: According to the findings, 56.1% of the participants were male, 39.8% had an undergraduate degree, 49.5% were aged between 17 and 29, 14.8% were healthcare workers, and 31.1% had a fear of injection. It was determined that gender, education level, fainting after injection, delaying injection due to the fear of injection, having the injection when making sure that it would cause no pain, and fear of pain had a statistically significant effect on fear of injections ($p < 0.05$).

Conclusions: In this study, gender, level of education, fainting after injection, delaying injection due to the fear of injection, having the injection when making sure that it would cause no pain, and fear of pain were determined as significant predictors of fear of injections.

Keywords: Intramuscular injection; adult; fear of injections

Introduction

According to the Demographic and Health Surveys (DHS), 1.64 injections per person per year (N=840.711) were reported in 2011-2015 (Hayashi et al. 2019). According to the 2016 report of the World Health Organization (WHO), it is estimated that approximately 16 billion intramuscular injections are administered each year and that 90% of these injections are administered for treatment and 5% for vaccination (World Health Organization, 2016). Administration of an injection can be an unpleasant experience for individuals (Zore & Dias, 2014). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), needle phobia is a more extreme psychiatric disorder than generalized fear. Needle phobia often involves visual avoidance of the phobic stimulus and may lead to an initial rise in blood pressure followed by a sudden drop, thus leading to fainting (Jenkins, 2014). Fear of needles not

only affects the individual's quality of life but also delays future medical care demands (Ozdemir, Akay & Akyol, 2013). Fear of injections may result in delaying or not having the injection. Therefore, it negatively affects individuals' plans for marriage, travel, education, immigration, or work, and it is stated that students may give up careers due to fear of injections (Marks, 1988). Postponing or not having an injection due to fear of injections may adversely affect the treatment of acute or chronic diseases (McAllister et al. 2012). While the majority of children experience fear of needles, the incidence of needle fear varies between 20-50% in adolescents, 20-30% in young adults, and below 5% in older adults (McLenon & Rogers, 2019). Despite this, fear of needles is still not systematically evaluated in clinical care settings. In fact, it is often underestimated by clinicians, which can create challenges for healthcare professionals in managing their patients and working with them (Duncanson et al., 2021).

In care settings, it is usually the nurse who administers the injections. Therefore, the administration of medication, which has an important place in the treatment of patients, is among the responsibilities of nurses, and they are responsible for the safe administration of medication (Akbiyik, 2021). While fear of needles is accepted in practice, the extent of needle fear, characteristics of the individuals who are affected and the factors leading to the fear have not yet been fully established (McLenon & Rogers, 2019). Understanding the conditions that affect fear of injections will enable the development and implementation of interventions to alleviate this fear.

Research questions

1. What is the frequency of fear of injections in adults?
2. What personal characteristics affect fear of injections?

Methods

Study Design: The study was conducted a descriptive design to determine fear of injections and the factors affecting this fear in adults.

Setting and Sample: The study was carried out between January and February 2020 in the outpatient injection clinic of a state hospital in a province in the Central Anatolia region of Turkey. In the outpatient injection clinic, the medication prescribed by the physician is administered by nurses.

The population of the study consisted of 30.584 individuals who presented to the outpatient injection clinic of the state hospital between January 01 and December 31, 2018. The sample of the study was calculated as 196 individuals on the G*Power Version 3.1.9.2 software based on medium effect size (effect size=0.5), an alpha significance level of 0.05, and 95% power.

Individuals who were aged 18 and over, agreed to participate in the study, and were administered medication intramuscularly were included in the study.

Instruments and Data Collection: Data were collected by using a questionnaire form and the Fear of Pain Questionnaire -III.

The Questionnaire Form: The questionnaire form was developed by the researchers following a review of the literature (Hamilton, 1995; McNeil & Rainwater, 1998; McLenon & Rogers, 2019). It consisted of questions about the socio-demographic characteristics of the individuals

(gender, age, education level) and their fear of injections. Fear of injections was determined by asking the adults "Are you afraid of injections?"

The Fear of Pain Questionnaire-III: The Fear of Pain Questionnaire-III is a 30-item, 5-point Likert-type scale that was developed to measure fear of and/or anxiety about pain. In the study conducted by McNeil and Rainwater (McNeil & Rainwater, 1998), Cronbach's alpha coefficients of the scale were found as 0.88 for the "fear of severe pain" sub-dimension, 0.87 for the "fear of minor pain" sub-dimension, 0.87 for the "fear of medical pain" sub-dimension, and 0.92 for the overall scale. The scale was adapted to Turkish by Ünver and Turan (Ünver & Turan, 2018), and Cronbach's alpha coefficients of the Turkish version of the scale were found as 0.884 for the "fear of severe pain" sub-dimension, 0.859 for the "fear of minor pain" sub-dimension, 0.881 for the "fear of medical pain" sub-dimension, and 0.938 for the overall scale. In the present study, Cronbach's alpha coefficients were determined as 0.875 for the "fear of severe pain" sub-dimension, 0.833 for the "fear of minor pain" sub-dimension, 0.863 for the "fear of medical pain" sub-dimension, and 0.929 for the overall scale. Participants mark the option that best describes the severity of their fear according to their pain experiences regarding the items listed on the scale. If the respondent has never experienced the pain specified in these items, he/she marks an option assuming how severely he/she might experience the fear expressed in the item. The scale consists of 3 sub-dimensions, and there are 10 items in each sub-dimension. The fear of severe pain sub-dimension consists of items 1, 3, 5, 6, 9, 10, 13, 18, 25, and 27; the fear of minor pain consists of items 2, 4, 7, 12, 19, 22, 23, 24, 28, and 30; the fear of medical pain includes items 8, 11, 14, 15, 16, 17, 20, 21, 26, and 29. There are no reverse items on the scale. The items are scored on a 5-point Likert-type scale with options ranging from 1 to 5 (1- not at all, 2- a little, 3- a fair amount, 4- very much, 5- extreme). For each item, a score of 1 (not at all) means no fear is felt at all, and a score of 5 means an extreme level of fear is felt. The lowest and highest overall scores range between 30 and 150, while the lowest and highest sub-dimension scores range between 10 and 50. A high score on the scale indicates a high fear of pain.

The study data were collected by the researcher by using the face-to-face interview technique. Data collection tools were applied to the individuals in the waiting area after the administration of the

injection in the injection room. The implementation of the data collection tools took approximately 10 minutes.

Data Analysis: The SPSS (Statistical Package for the Social Sciences) 23.0 software package was used for statistical analysis of the data. Categorical measurements were presented as counts and percentages and continuous measurements as mean and standard deviation values (median and minimum-maximum values where appropriate). Shapiro-Wilk test was used to determine whether the parameters in the study showed a normal distribution. In the comparison of continuous measurements between the groups, the distributions were controlled, and the independent student t-test was used for the parameters with normal distribution for two variables and One Way ANOVA tests for more than two variables. To determine the differences between the groups in more than two variables, Tukey's method, one of the Post Hoc analyses, was employed. The statistical significance level was taken as $p < 0.05$ in all tests.

Ethical Considerations: Verbal and written consent was obtained from the participants to conduct the study. Institutional permission of the Health Directorate (permission no: 20171210-020) and ethics committee approval (ethics committee approval no: 23.07.2019/12) of the University in the province where the research was conducted was obtained.

Results

According to the findings, 56.1% of the participants were male, 39.8% had an undergraduate degree, 49.5% were aged between 17 and 29, and 14.8% were healthcare workers. It was determined that 31.1% of the participants were afraid of injections. When the severity of individuals' injection fear levels was examined, it was determined that 68.9% had no fear, 10.7% had a little fear, 12.7% had moderate fear, and that 7.7% had an extreme level of fear (Table 1). It was determined that gender, education level, fainting after injection, delaying injection due to fear of injection, and having the injection when making sure that it would cause no pain had a statistically significant effect on fear of injections ($p < 0.05$). Females were 17.750 times more likely to fear injections than males. The rate of fear of injections was 7.834 times higher in those with primary, high school, undergraduate, and graduate education than in those with elementary school education. It was 0.214 times higher in those who fainted after injection than in those who did not. The rate of this fear was 0.075 times in those who delayed injection due to the fear of injection than in those who did not. It was 12.209 times higher in those who would have an injection when making sure that it would be painless than in others (Table 2). It was determined that fear of pain had a statistically significant effect on fear of injections ($p < 0.05$). Fear of pain was found to increase fear of injections by 0.967 times (Table 3).

Table 1. Participants' fear of injection and severity of the fear (n=196)

		Count (n)	Percentage (%)
Fear of injections	Yes	61	31.1
	No	135	68.9
Severity of the fear of injections	Not at all	135	68.9
	A little	21	10.7
	Moderate	25	12.7
	Much	15	7.7
Total		196	100

Table 2. Evaluation of the relationship between the characteristics of the participants and fear of injections by using the binary logistic regression model (n=196)

	β Coefficient	Standard Error	Wald Statistics	Degree of freedom	P	Exp (β)
Constant	-22.451	11.827	3.604	1	0.048	0.000
Gender	2.876	1.413	4.143	1	0.042*	17.750
Age	0.451	0.559	0.651	1	0.420	1.570
Education	2.058	0.898	5.259	1	0.022*	7.834
Being a healthcare worker	-1.076	1.357	0.628	1	0.428	0.341
Having an injection previously	-0.325	6.357	0.003	1	0.959	0.722
Having regular injections	0.207	2.429	0.007	1	0.932	1.230
Previous hospitalizations	1.426	1.248	1.305	1	0.253	4.161
Fainting after injection	-1.544	0.788	3.836	1	0.050*	0.214
Avoiding injections due to the fear of injection	-0.428	1.149	0.138	1	0.710	0.652
Delaying injections due to the fear of injection	-2.587	1.112	5.409	1	0.020*	0.075
Having the injection when making sure that it would cause no pain	2.502	1.223	4.187	1	0.041*	12.209
Severity of the injection pain	1.433	0.974	2.163	1	0.141	4.191

*p<0.05

Table 3. Evaluation of the relationship between fear of injections and fear of pain by binary logistic regression model (n=196)

	β Coefficient	Standard Error	Wald Statistics	Degree of Freedom	P	Exp (β)
Constant	3.304	.614	28.967	1	.000	27.212
FPQ	-.034	.008	19.215	1	.000	.967

FPQ : The Fear of Pain Questionnaire-III

Discussion

Needle phobia is an anxiety disorder affecting 3.5% to 10% of the general population (Nir et al. 2003). The frequency of fear of needles varies between 0.2-80% in patients with diabetes, 17-52% in patients with cancer, and 25-47% in patients with kidney failure (Duncanson et al.

2021). Wright et al. found needle phobia as 22% in the adult population (Wright et al. 2009). Our study was conducted with individuals who received intramuscular injections in an outpatient injection clinic. It was determined that 31.1% of these individuals had a fear of injection.

According to these results, fear of needles/injections affects many people.

In their study titled “the fear of needles: a systematic review and meta-analysis”, McLenon and Rogers found needle fear and phobia more common in females (McLenon & Rogers, 2019). Many previous studies (Kleinknecht Thorndike & Walls, 1996; Bienvenu & Eaton, 1998; Nir et al. 2003; Stinson et al. 2007; Wright et al. 2009; Armstrong, Hemminger & Olatunji, 2013; Park et al. 2013; Milovanović et al. 2017) have also found that females were more likely to have needle phobia than males. In our study, too, fear of injections was found to be higher in females than in males, and it was determined that gender was a significant predictor of fear of injections ($B=17.750$, $p<0.05$). Contrary to our study, Freeman et al., (2021) showed that gender was not a significant predictor of fear of injections (Freeman et al., 2021). Some research results have shown that individuals with a low level of education have more fear of injections than those with a high level of education and that the level of education is inversely proportional to the level of needle phobia (Kose & Mandiracioglu, 2007; Wright et al., 2009; Park et al. 2013). The results of our study do not support these research results. In the findings of our study, individuals with primary, high school, undergraduate, and graduate education were found to have more fear of injections than those with elementary school education, and it was determined that the level of education was directly proportional to the level of injection fear. As a result, it was found that education level was a significant predictor of fear of injections ($B=7.834$, $p < 0.05$). In the study of Wright et al. (2009), more than 60% of the participants reported physical symptoms and more than 20% reported fainting in response to the injection. It has been determined that those who have a fear of needles experience significantly higher rates of dry mouth, sweating, shortness of breath, nausea, and fainting/dizziness during injection (Wright et al. 2009). Mason et al. (2021) stated that 30 (75%) out of 40 participants with blood-injection-injury phobia reported a history of fainting (Mason et al. 2021). Kleinknecht et al. (1997) found that 70 out of 713 participants (9.7%) fainted completely and 235 almost fainted in response to situations, such as a blood draw, having an injection, seeing blood, and injury (Kleinknecht, Kleinknecht & Thorndike, 1997). In the findings of our study, those who fainted after injection had more fear of injections than

those who did not, and it was determined that fainting after injection was directly proportional to the level of fear. Fainting after the administration of injection was determined to be a predictor of fear of injections ($B=0.214$, $p=0.05$).

Patients with needle phobia avoid health services. It is stated that patients with needle phobia avoid treatment even when they need it (Sokolowski, Giovannitti & Boynes, 2010). According to the findings of our study, the rate of injection fear was higher in those who delayed injection due to fear of injection than those who did not. This result of our study shows that fear of injections was a reason for delaying injection. This may adversely affect the treatment of diseases. Pain emerging during the administration of an injection may be considered "mild" by some, and for others, needle procedures are far from being good (not “just a poking”) and are associated with a high degree of pain and fear (McMurtry et al. 2015). Fear of pain and fear of needles often coexist (Duncanson et al. 2021). Pain has a significant effect on fear of needles. The relationship between needle pain and fear is possibly reciprocal (McMurtry et al. V. 2015). In our study, the fear of injection was higher in those who would have injections when they made sure that it would be painless than in others, and the fear of pain was found to increase the fear of injection. Fear of pain had a significant effect on fear of injections ($B= 27.212$, $p= 0.000$). This result of the study shows that pain causes fear of injections. Fear of needles can trigger pain and pain can trigger fear of needles, and this can turn into a vicious circle over time (Noel et al. 2012). Effective pain management can prevent the development of fear of injections and also help control the fear. Therefore, effective management of both is important.

Conclusion: In this study, it was determined that 31.1% of the participants had a fear of injection. Gender, education level, fainting after injection, delaying injection due to fear of injection, having injections when making sure that it would be painless, and fear of pain were determined as significant predictors of fear of injections. In line with these findings obtained from the study, it can be recommended that before administration of injections, nurses should evaluate patients in terms of fear of injections and the factors affecting the fear and apply fear-related nursing interventions to patients with injection fear and that in future studies, the effectiveness of interventions to reduce fear of injection and pain should be evaluated.

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References

- Akbiyik, A. (2021). Parenteral Drug Applications. In: Basic Nursing: Fundamentals, Concepts, Principles, Practices. Ed. Kara Kasikci, M., & Akin E. 1st Edition, Istanbul Bookstores, pp. 529-555
- Armstrong, T., Hemminger, A., & Olatunji, B. O. (2013). Attentional bias in injection phobia: Overt components, time course, and relation to behavior. *Behaviour Research and Therapy*, 51(6), 266-273. <https://doi.org/10.1016/j.brat.2013.02.008>
- Bienvenu, O. J., & Eaton, W. W. (1998). The epidemiology of blood-injection-injury phobia. *Psychological medicine*, 28(5), 1129-1136. <https://doi.org/10.1017/S0033291798007144>
- Duncanson, E., Le Leu, R. K., Shanahan, L., Macauley, L., Bennett, P. N., Weichula, R., ... & Jesudason, S. (2021). The prevalence and evidence-based management of needle fear in adults with chronic disease: A scoping review. *Plos one*, 16(6), 1-16. <https://doi.org/10.1371/journal.pone.0253048>
- Freeman, D., Lambe, S., Yu, L. M., Freeman, J., Chadwick, A., Vaccari, C., ... & Loe, B. S. (2021). Injection fears and COVID-19 vaccine hesitancy. *Psychological Medicine*, 1-11. <https://doi.org/10.1017/S0033291721002609>
- Hamilton, J. G. (1995). Needle phobia: a neglected diagnosis. *Journal of Family Practice*, 41(2), 169-182.
- Hayashi, T., Hutin, Y. J. F., Bulterys, M., Altaf, A., & Allegranzi, B. (2019). Injection practices in 2011–2015: a review using data from the demographic and health surveys (DHS). *BMC health services research*, 19(1), 1-10. <https://doi.org/10.1101/574137>
- Jenkins, K. (2014). II. Needle phobia: A psychological perspective. *BJA: British Journal of Anaesthesia*, 113(1), 4–6. <https://doi.org/10.1093/bja/aeu013>
- Kleinknecht, R. A., Kleinknecht, E. E., & Thorndike, R. M. (1997). The role of disgust and fear in blood and injection—related fainting symptoms: A structural equation model. *Behaviour Research and Therapy*, 35(12), 1075-1087. [https://doi.org/10.1016/S0005-7967\(97\)80002-2](https://doi.org/10.1016/S0005-7967(97)80002-2)
- Kleinknecht, R. A., Thorndike, R. M., & Walls, M. M. (1996). Factorial dimensions and correlates of blood, injury, injection and related medical fears: cross validation of the medical fear survey. *Behaviour Research and Therapy*, 34(4), 323-331.
- Kose, S., & Mandiracioglu, A. (2007). Fear of blood/injection in healthy and unhealthy adults admitted to a teaching hospital. *International journal of clinical practice*, 61(3), 453-457. <https://doi.org/10.1111/j.1742-1241.2006.01150.x>
- Marks, I.M. (1988). Blood-injury phobia: a review. *Am J Psych*, 145(10), 1207-1213. <https://doi.org/10.1176/ajp.145.10.1207>
- Mason, E. C., Gaston, J. E., Pestell, C. F., & Page, A. C. (2021). A comprehensive group-based cognitive behavioural treatment for blood-injection-injury phobia. *British Journal of Clinical Psychology*. <https://doi.org/10.1111/bjc.12345>
- McAllister, N., Elshtewi, M., Badr, L., Russell, I. F., & Lindow, S. W. (2012). Pregnancy outcomes in women with severe needle phobia. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 162(2), 149-152. <https://doi.org/10.1016/j.ejogrb.2012.02.019>
- McLenon, J., & Rogers, M. A. (2019). The fear of needles: A systematic review and meta-analysis. *Journal of advanced nursing*, 75(1), 30-42. <https://doi.org/10.1111/jan.13818>
- McMurtry, C. M., Noel, M., Taddio, A., Antony, M. M., Asmundson, G. J., Riddell, R. P., ... & Shah, V. (2015). Interventions for Individuals With High Levels of Needle Fear: Systematic Review of Randomized Controlled Trials and Quasi-Randomized Controlled Trials. *The Clinical journal of pain*. 31(10S), S109-S123. <https://doi.org/10.1097/AJP.0000000000000273>
- McMurtry, C. M., Riddell, R. P., Taddio, A., Racine, N., Asmundson, G. J., Noel, M., ... & Shah, V. (2015). Far from "just a poke": Common painful needle procedures and the development of needle fear. *The Clinical journal of pain*. (31), S3–S11. <https://doi.org/10.1097/AJP.0000000000000272>
- McNeil, D. W., & Rainwater, A. J. (1998). Development of the fear of pain questionnaire-III. *Journal of behavioral medicine*, 21(4), 389-410.
- Milovanović, B., Tomović, D., Janković, S. M., Grubor, I., Nikolić, L., Nikolić, M., ... & Nikolić, M. (2017). Factors influencing the fear of needles among students of medicine and pharmacy. *Acta facultatis medicae Naissensis*, 34(2), 147-158. <https://doi.org/10.1515/afmnai-2017-0016>
- Nir, Y., Paz, A., Sabo, E., Potasman, I. (2003) Fear of injections in young adults: Prevalence and associations. *The American Journal of Tropical Medicine and Hygiene*, 68(3), 341–344. <https://doi.org/10.4269/ajtmh.2003.68.341>
- Noel, M., Chambers, C. T., Petter, M., McGrath, P. J., Klein, R. M., & Stewart, S. H. (2012). Pain is not over when the needle ends: a review and preliminary model of acute pain memory development in childhood. *Pain management*, 2(5), 487-497. <https://doi.org/10.2217/pmt.12.41>
- Ozdemir, L., Akay, B. N., & Akyol, A. (2013). Effect of methylprednisolone injection speed on the perception of intramuscular injection pain. *Pain Management Nursing*, 14(1), 3-10. <https://doi.org/10.1016/j.pmn.2010.03.002>
- Park, S., Sohn, J. H., Hong, J. P., Chang, S. M., Lee, Y. M., Jeon, H. J., ... & Cho, M. J. (2013). Prevalence, correlates, and comorbidities of four DSM-IV specific phobia subtypes: results from the Korean Epidemiological Catchment Area study. *Psychiatry*

- research, 209(3), 596-603.
<https://doi.org/10.1016/j.psychres.2012.12.025>
- Sokolowski, C. J., Giovannitti, J. A., & Boynes, S. G. (2010). Needle phobia: etiology, adverse consequences, and patient management. *Dental Clinics*, 54(4), 731-744.
<https://doi.org/10.1016/j.cden.2010.06.012>
- Stinson, F. S., Dawson, D. A., Chou, S. P., Smith, S., Goldstein, R. B., Ruan, W. J., & Grant, B. F. (2007). The epidemiology of DSM-IV specific phobia in the USA: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychological medicine*, 37(7), 1047-1059.
<https://doi.org/10.1017/S0033291707000086>
- Uunver, S., & Turan, F. N. (2018). Turkish validity and reliability study of fear of pain questionnaire-III. *Pain*, 30(1), 18-27.
<https://doi.org/10.5505/agri.2017.62681>
- Wright, S., Yelland, M., Heathcote, K., Ng, S. K., & Wright, G. (2009). Fear of needles: Nature and prevalence in general practice. *Australian Family Physician*, 38(3), 172-176.
- World Health Organization (2016) WHO guideline on the use of safety-engineered syringes for intramuscular, intradermal and subcutaneous injections in health-care Settings. Geneva. [online]. <http://www.who.int/mediacentre/news/releases/2015/injection-safety/en/> Accessed date: 23 September 2021
- Zore, G., & Dias, R. (2014). Effectiveness of nursing interventions on pain associated with intramuscular injection. *International Journal of Science and Research*, 3(6), 1995-2000.