

Prevalence of tremor disorders in young male population of turke

Abstract

Objective: Prevalence studies of tremor disorders for young ages are less. The worldwide prevalence of essential tremor for all ages over 18 is approximately between 0.39% and 4.2%. The primary goal of this study is to investigate the prevalence of essential tremor and as well as prevalence of other tremor disorders in young male persons.

Methods: A total of 7200 male individuals, coming from different geographic regions for attending to the army forces in a city in the west of Turkey, Çanakkale, enrolled in the study. Their ages varied between 20 and 36. The study was planned in 2 phases. In the first phase, a physician who was trained about tremor evaluation examined the participants by taking their anamnesis and physical examination. The tremors detected in this phase were re-evaluated by a neurologist in the second phase. Essential tremor was diagnosed according to the criteria of Washington Heights-Inwood Genetic Study of Essential Tremor (WHIGET), physiological tremor and psychogenic tremor were diagnosed according to the Consensus Statement of the Movement Disorder Society on Tremor.

Results: The number of participants with tremor was found to be 626 (8.7%) in the first phase and they were sent to the hospital for the second phase. Examination of the participants by the neurologist, revealed essential tremor in 226 (3.13%), physiological tremor in 318 (4.41%) and psychogenic tremor in 82 (1.13%).

Conclusion: Essential tremor prevalence we found in young male individuals is higher than the similar studies. Again in our study, we detected physiological tremor prevalence similar to essential tremor.

Keywords: essential tremor, physiological tremor, psychogenic tremor, young male, prevalence, turkey

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Abbreviations: WHIGET, washington heights-inwood genetic study of essential tremor; ET, essential tremor; PT, physiological tremor; PST, psychogenic tremor

Introduction

Tremor could be described as rhythmic oscillation of a body part resulting from alternating contraction of agonist and antagonist muscles and it is the most common involuntary movement disorder.¹ Common types of tremor are including; essential, physiologic, parkinsonian, psychological and drug-induced tremor.² The most frequent reason of pathological tremor, essential tremor (ET), is defined as the mostly symmetrical and bilateral, kinetic tremor of primarily hands and forearm.³ The disease shows a bimodal distribution with peaks in the 6th decade mostly, and less at the 2nd decade.⁴

ET prevalence shows a big difference in the worldwide due to the lack of a commonly accepted diagnostic criterion, different methodological procedures used, and probably genetic and ethnic factors.^{4,5} The mean ET prevalence that increases with age is calculated as 0.9% for all ages and 4.6% for individuals at age 65 or higher.⁴ It is reported that the prevalence rate under 45 years changes between 0.481% and 2.7%.⁶⁻¹⁰

The physiological tremor (PT) is defined as the postural tremor with low amplitude at classically 8-12 Hz frequency that may be seen in everybody and may increase with anxiety and fatigue.^{1,11} Healthy people may show some tremor but this condition does not cause any complaint. If it is exacerbated by some factors, such as anxiety, thyrotoxicosis, caffeine or other stimulating substances and medications, then it is considered as enhanced physiological tremor.¹

The prevalence of enhanced PT was found between 2.8%¹² to 4.14%¹³ in studies.

The tremor studies that are limited to a particular region are generally 2-phased; the first phase consists of questionnaire studies, while the individuals are scanned by door-to-door visits and the individuals with tremor are detected; in the second phase, the tremor diagnosis is confirmed by a neurologist. In this method of questionnaire, mild cases may be unnoticed and the results reflect a particular region's prevalence. In our study, the participants were evaluated by physicians in both phases to provide more accurate and general results. Our aim is to investigate the prevalence of essential and other tremors as well in young male patients who comes to us from different part of Turkey.

Methods

This study is approved by the local ethics committee and consent had been taken from the informed participants.

Participants

A total of 7200 soldiers that work in the army forces in Çanakkale between the dates of January-July 2009 at the age between 20 and 36 were included in the study. Çanakkale Young male individuals from different geographical and ethnic regions of Turkey come here to join the army forces for compulsory duty. Approximately 13 million people at this group of age live in Turkey.¹⁴ Our study cohort makes approximately 0.04% of the similar age group in Turkey. For this reason, we believe that our study cohort reflects accurately Turkey's young male individuals at the same age group.

The study was designed in 2 phases:

a. 1st Phase

In the first phase, a physician who was trained about tremor examination and evaluation asked all the participants the same question: "Do you have any tremors in any part of your body, particularly in your hands". All participants were evaluated at the sitting position, to evaluate resting tremor. The participants were evaluated in terms of postural tremor in arms stretched position and in terms of kinetic tremor during activity (drinking water from a glass, eating and writing activities). All of the individuals that answered "yes" at the questionnaire or the individuals with suspected tremor at the examination were included in the second phase.

b. 2nd Phase

All the participants chosen for the second phase were evaluated and their neurological examinations were performed by a neurologist who is dealing with movement disorders in hospital. For the diagnosis of ET, Washington Heights-Inwood Genetic Study of Essential Tremor (WHIGET) diagnostic criteria and clinical evaluation scale was used¹⁵. All of the patients filled the Movement Disorders Screening Form. The ID information of the patients was taken by their own hand-writings, and the hand they used was recorded. Their education status, how long they had tremor, if they had any relatives that had the same complaints, and if they used any drugs or substance were all recorded. In the WHIGET criteria, 1 test evaluated postural tremor, and 5 tests evaluated kinetic tremor, each test scored between 0-3 points and both the dominant and non-dominant hands were evaluated. The patients were scored between 0-36 points. For evaluation of kinetic tremor, drinking water from a glass, pouring water to the glasses, drinking water with a spoon, finger-nose test and spirogram tests were used.

During the examination, the participants' talks were checked if they had any tremor. The participants who were diagnosed with ET were checked for complete blood count, liver, kidney and thyroid function tests, fasting blood sugar level, and blood electrolyte levels. The participants that used any drug or substance that may bring out tremor, or participants who had a neurological or systemic disease that tremor may be in company with were excluded from the study. The enhanced PT and psychogenic tremor (PST) diagnosed according to the Ad Hoc Scientific Committee's "Consensus Statement of the Movement Disorder Society on Tremor".¹

Results

The participants were all male, and their ages were between 20 and 36 (mean age=21.2 years). The number of participants who had tremor was found to be 626 (8.7%) in the first phase and they were sent to the military hospital for the second phase. The examination of the soldiers by the neurologist revealed ET (definite+possible+probable) in 226 (3.13%) and enhanced PT in 318 (4.41%) soldiers. Eighty two (1.13%) participants had psychogenic tremor.

Additional finding to tremor was not detected in participants. The tremor age at onset time average is 3.4 years in ET group, and 3.6 years in enhanced PT group. Family history for ET patients was 42%. Only 22 (9.7%) of the 226 ET patients have had treatment before. Other patients either were not aware of the situation or did not have the status to go to health institutions. In all participants with ET, the tremor was bilateral, being more dominant in one hand; there was no tremor in other parts of the body. The reasons of physiological tremor were listed in Table 1.

Table 1 Reasons of the enhanced physiologic tremor

Cause	Number (%)
Dextroamphetamine use	12 (3.8%)
Stress	54 (17%)
Sleep deprivation	40 (12.6%)
Alcohol use	31 (9.7%)
Smoking	70 (22%)
Coffee use	45 (14.1%)
Intense exercise	27 (8.5%)
Unknown	39 (12.3%)

Discussion

In our study, we found the ET prevalence in young male individuals as 3.0%, and the prevalence of enhanced PT as 4.41%. Similar to our study, there are few young individuals' tremor prevalence studies compared to older population, and in these studies, the prevalence between the ages 17-39 changes between 0.481%-2.7%⁶⁻¹⁰ (Table 2). In a study where Sur et al.,⁷ included also the young individuals, the results were less than our study, while in the study of Kusbeci et al.,⁸ in 221 young individuals (17-26 years of age), the ET prevalence was found similar to ours (3%). In only more than one third of the previous studies, male dominance was found and the female/male rates were similar generally.⁵ Since our study group does not include females, we can see that gender does not play a role in the prevalence, just as reported in the aforementioned previous studies.

Table 2 Essential tremor prevalence studies in young and middle-age individuals

Study	Population	Methodology	Prevalence
Sur et al., ⁷	736	Turkey Questionnaire, examination	Age (18-30 years): M: 0.68% Both gender: 0.79% Age (31-40 years): 0.83%
Das et al., ⁶	17499	India Questionnaire, examination	Age (20-29 years): M: 0.96, F: 0.21, T: 1.12 Age (30-39 years): M: 1.11, F: 0.71, T: 1.03
Kusbeci et al., ⁸	221	Turkey Questionnaire, examination	Age (17-26 years): 2.7%
Louis et al., ⁹	970	Bangladesh Questionnaire, examination	Age (20-29 years): 1.5% (30-39 years): 1.1%
Nijdeka et al., ¹⁰	1837	Nigeria Questionnaire, examination	Age (15-24 years): 0.481% (25-34 years): 0.505% (35-44 years): 0.730%
Present study, 2009	7200	Turkey 1 st Phase Physician, 2 nd Phase neurologist examination	Age (20-36 years): 3.13%

M: Male; F: Female; T: Total

In prevalence studies, generally individuals in a population of a particular region were examined but different from those our study was planned as including young males all over Turkey. In studies, the individuals are usually detected by questionnaires previously in the scanned population and this is followed by the examination of the individuals with tremor by a movement disorder specialist, and classification according to the various diagnostic tremor criteria. While the questionnaire studies are successful to detect the intermediate and severe cases that the complaints affect the person's daily functions,

they may not detect the cases of mild levels and individuals with enhanced physiological tremor. Distinctive from these studies, in our study, the individuals were evaluated by a physician in the first phase, which have been trained about tremor examination. By this way, all individuals with any tremor can be chosen to be examined by the neurologist. In addition, even the number of the older population that was scanned in the previous studies was adequate; the small number of young individuals makes it difficult to detect the ET prevalence in young population. In this respect, our study is one of the first studies till now that scanned the maximum number of young individuals. We found higher prevalence values in ET patients than previous studies. There is a study which concludes that large proportions of the ET patients may never seek medical attention in their life span.¹⁶ The reason for the high ET rate observed in our study may be due to inclusion of individuals both who applied to the health care provider and not.

Enhanced physiological tremor has not been studied as much as ET and as far as we know there are few reports on the prevalence of enhanced PT. These studies were conducted with old individuals, and as far as we know, there is no study of enhanced PT prevalence in young individuals. Erer et al.,¹³ found the enhanced PT prevalence 4.14% in individuals at the age of 40 or more,¹³ and Barbosa et al.,¹² found increased enhanced PT prevalence 2.8% in individuals at the age of 64 or more.¹² We reported the prevalence of detectable PT in normal individuals as 4.3% which is slightly higher than the prevalence of ET.

One of the common types of the tremor is psychological tremor. Although it can be difficult to differentiate from organic tremors some clinical features like starts and ends abruptly or have variable clinical course can often help the diagnosis. Currently, there is not a common consensus on diagnostic criteria. Prevalence of psychogenic movement disorder is 2-20%¹⁷ and to our knowledge there is no data related to prevalence of psychogenic tremor.

Conclusion

Our study's limitations no individuals with advanced symptoms were included; because they were considered to be unavailable for the army before they have been sent to regiments like Çanakkale military service. Another disadvantageous factor is that gender of all our patients was male. Despite these factors, we believe that our study reflects the ET and PT prevalence in Turkey's young population accurately, due to the participation from all regions of Turkey, the adequate number of the participants, and the presence of a clinician at the level of patient detection. We think that our study will provide accurate prevalence values for ET and enhanced PT in the young population of Turkey for the future studies.

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Conflicts of interest

None.

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