INDIVIDUAL ANTIDEPRESSANT USE AND ITS ANALYSIS FOR OECD COUNTRIES ⁽¹⁾

BİREYSEL ANTİDEPRESAN TÜKETİMİ VE OECD ÜLKELERİNE YÖNELİK ANALİZİ

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Öz: Günümüzde bireysel ve toplumsal yaşam koşulları hızlı bir değişim göstermekte ve her geçen gün yaşanan farklı olumsuzluklar ve kişisel sorunlar bireylerin psikolojik ve sosyolojik olarak sorun yaşamalarına neden olmaktadır. Bu durum bireylerin psikolojik, psikiyatrik ve sosyolojik anlamda destek almasını bazı durumlarda ise antidepresan ilaç tüketimini artırmaktadır. **Amaç:** Bu çalışma OECD ülkelerine yönelik olarak antidepresan satış miktarı, tüketimi, kadın ve erkekler açısından sağlık algılamasına yönelik mevcut durumun belirli zaman dilimi içerisinde ortaya koyulmasını amaçlamaktadır. **Kapsam ve Yöntem:** Bu bağlamda 36 OECD ülkesine ilişkin 2010 ve 2018 yıllarına ait veriler derlenerek elde edilen veriler doğrultusunda farklı analiz yöntemleri ile karşılaştırmalı olarak OECD ülkelerini kapsayan antidepresan satış miktarı, tüketimi, kadın ve erkekler açısından sağlık algılaması incelenmiştir. Çalışmada kullanılan veriler OECD web sitesi üzerinden elde edilmiştir. Verilerin analizinde EvIEWS 8 yazılımı kullanılmıştır. Çalışmada Birim kök analizi ve Granger Nedensellik analizinden faydalanılmıştır. Ayrıca Regresyon analizi bağımlı değişken ile bağımsız değişken arasındaki ilişkinin yönünü ve büyüklüğünün belirlenmesi için kullanılmış ve tüm istatistik analizleri 0.05 anlamlılık düzeyinde test edilmiştir. **Sonuç:** Çalışma sonunda antidepresan satış miktarının Kanada’da, tüketim miktarının ise İzlanda’da yüksek oranlarda olduğu tespit edilmiştir. Kadınlara ait algılanan sağlık düzeyinin (iyi/çok iyi) Yeni Zelanda’da, erkeklerde ise Kanada’da daha olumlu olduğu ayrıca antidepresan satış miktarındaki bir birimlik artışın, kadınların iyi/çok iyi olarak algılanan sağlık düzeylerinde 4.56 birim artış, erkeklerin iyi/çok iyi olarak algılanan sağlık düzeylerinde ise 4.87 birim artış, tüketim miktarındaki bir birimlik artışın ise, kadınların iyi/çok iyi olarak algılanan sağlık düzeylerinde 0.99 birim artış sağladığı sonucuna ulaşılmıştır.

Anahtar Kelimeler: Antidepresan, OECD, Erkek, Kadın, Sağlık Algısı, İlaç

Abstract: Today, individual and social living conditions change rapidly and different negative and per-sonal problems experienced each day cause individuals to experience psychological and sociological problems. This situation increases the individuals’ need for psychological, psychiatric and sociological support and in some cases increases the consumption of antidepressant drugs. **Purpose:** This study aims to reveal the current situation regarding the sales volume of antidepressants, consumption and health perception for women and men in OECD countries for a certain period of time. **Scope and Method:** In line with the data obtained by compiling data belonging to the years 2010 and 2018 for 36 OECD countries, a comparative analysis was conducted on antidepressant sales volume, consumption and health perception for men and women including OECD countries with different analysis techniques. Data used in the study were obtained from the OECD website. EvIEWS 8 software was used in the data analysis. Granger causality analysis and unit root test were utilized in the study. In addition, regression analysis was used to determine the direction and magnitude of the relationship between dependent variable and independent variable and all statistical analyses were tested at 0.05 significance level. **Conclusion:** It has been concluded in the study that antidepressant sales volume is high in Canada and consumption amount is high in Iceland. Perceived health level (good/very good) of females is the high-est in New Zealand and highest in Canada for males, one unit of increase in antidepressant sales volume leads to 4.56 units of increase in perceived good/very good health level of females and 4.87 units of increase in perceived good/very good health level of males while one unit of increase in consumption amount leads to 0.99 units of increase in perceived good/very good health level of females.

Key Words: Antidepressant, OECD, Male, Female, Health Perception, Drug

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INTRODUCTION

Personal lifestyle varies among persons, cultures, believes, communities and regions. Psychological structure also changes in many ways and causes instant changes. This situation has significant effects on individuals and societies.

Our lifestyle and belief concepts are changing with each passing day. We can collect and diversify the reasons of these changes under many factors. But it would be accurate to say that the most important reasons are living standards and the sociological structure we are in.

Individuals and societies are adopting new life styles or trying to keep up with these life styles day by day by their living standards.

As an important dimension, daily events related to the necessities of living that individuals and societies are obliged to do cause them to lead a psychologically monotonous life, which reveals the fact that it causes psychologically negative conditions for individuals and societies.

Especially the habit of eating and drinking, a monotonous and sedentary life, irregular sleep, unqualified and various personal relationships, social events, political reasons, sociological and political effects, economic

factors and many other reasons cause the individual to have psychological problems.

In line with the above-mentioned reasons, psychological change goes beyond the will and power of the individual in some cases and necessitates external support.

The aim of this application study performed related to OECD countries is to analyze the dimension of antidepressant purchased and consumed within the scope of the individual dimension with different techniques and to give the results of the findings obtained.

THEORETICAL FRAMEWORK and LITERATURE REVIEW

Human is a being that is obliged to work. The people who have to work to maintain their life, to meet the standards of living and to meet their needs come across different problems in their working life every day (Berger, 1961: 213).

Economic power and the wage earned are an important factor in shaping individual's living standards, especially the social status (Tınar, 1996: 3).

Social relations and living standards are the most important factors in shaping the individual's psychological and health status. Temporal structure, bilateral relations, physical dimension, intellectual structure, economic power, social status and social de-

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velopments result in significant impacts on individual's daily life (Giddens, 2000: 237-326).

Inactivity and physical monotony are the most important problems of today's people. Sports and physical activity significantly affect the physical and psychological health factors of the individual. This situation is not only an obstacle for an individual to lead a healthier life, but also affects a healthier life. Sedentary life causes an increased risk for cancer for the individual. ¹

When many literature and application studies are examined, sedentary life and monotonous life, which are shown to have an effect on the majority of psychological problems, significantly decrease the individual's quality of life. ²

A newspaper report emphasizes that the consumption of antidepressant drugs has increased by 27% in the last 5 years. In the same report, it has been pointed out that 9 million individuals have provided support by seeing mental and neurological specialists / doctors in recent years. ³

When we look at the developed world countries, we can say that the use of antidepressant drugs has increased rapidly in many developed world countries.

This situation shows that the individual and social structure is deteriorated, living standards and ways have changed, individual expectations and demands are changing day by day and the rate of unhappiness also increases.

In a study conducted by the World Health Organization WHO (2002), it was emphasized that expansion of rational drug consumption and use is an obligation. In the study which indicates the fact that unconscious drug consumption has become an individual problem even in the slightest health problems, it is stated that individual drug consumption and support increases with each passing day (WHO, 2002).

Individual and social structure changes cause many psychological problems, which increases the consumption of psychological and antidepressant drugs and raises the rate of use (Laing, 1990: 101).

Unconscious drug consumption has become an economic problem for countries. Increasing drug consumption and use is an important risk for the country's economy, and it also causes different problems to arise (Aydın, 2012: 57).

- 1 https://www.mcdonalds.com.tr/kampanyalar/kulahima-anlat#utm_source=programmatic&utm_medium=cpc&utm_campaign=banner
- 2 <http://www.turkishtimedergi.com/genel/ise-giris-mulakatinda-basarili-olmak/>
- 3 <https://onedio.com/haber/turkiye-de-antidepresan-kullanimi-son-5-yilda-yuzde-27-artti-pekineden-851773>

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Increasing individual drug consumption and individual expenditure on different drug types in recent years points to an approaching significant problem in terms of public measures. Ignoring the necessity of an emergency response to this situation creates a different ground for different problems to occur (Ulusoy and Sunmak, 2011: 310).

Along with the change in some personal problems, changes in living standards generate a significant impact on the psychology of the individual. This situation requires the individual to be inadequate and to receive external support. Antidepressant medication is the first thing suggested by the specialist / physician as a remedy for the problems an individual has experienced when s/he feels inadequate or needs external support. This situation increases the consumption of antidepressant drugs and causes individuals to become dependent (Yapıcı et al., 2001: 459).

When we look at developed world countries in the last 10 years, we can say that drug expenditure and its significant impact on the economy have an important dimension. "It is 7.2% in Italy, 9.5% in the Netherlands, 12.9% in the USA, 16.0% in France, 7.4% in Denmark, 33.6% in Hungary, 7.3% in Norway, 24.8% in Greece, 14.8% in Germany, and 27.1% in Mexico and the OECD average is 16.3%" (OECD, 2012).

There is also a significant difference in the relationship between the purchased and consumed drug. Although the high proportion of prescribed drugs is remarkable within the relationship between the applicant and the referenced, the imbalance in the consumption of prescribed drugs also poses a separate problem.

For instance, although many medicines prescribed by the physician are taken from the pharmacy, the use is unfortunately not realized and discarded.

In a research conducted by Ankara Chamber of Commerce in 2006, the fact that the rate of prescribed but trashed drugs in Turkey is 7% constitute the picture of what a great economic loss is experienced. In addition, it is a significant problem that the cost of unused medicines which are taken from the pharmacy and exceeding the expiration date at home or not used at all constitutes a burden of 500 million dollars on the country's economy (Şenol, 2010: 145).

The same problem applies to developed world countries. Emphasis is laid on the importance of rational drug consumption in many world and developed world countries. Although the importance of individual awareness is brought to the forefront, public service aids are created to raise awareness that it is not right

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to resort to drug consumption in every negative situation.

Considering the psychological problems, there is also a lot of scientific research on the fact that many antidepressant drugs used are actually unnecessary, or their use is not right at that moment. These studies indicate that individuals should seek answers to their problems with different social activities or psychological therapies before drug consumption.

It is emphasized that it is not right to use “antidepressant” in every problem. Increasing diversity of the problems experienced in today’s conditions and changing or difficult living standards make the psychological struggle of individuals impossible. This reality is coming to light every day. This situation increases the consumption of individual drug “antidepressants”. However, it is necessary to know the fact that it is not the right choice to use antidepressant drugs after each psychological problem.

Although such methods as antidepressant drug use (Berman et al., 2000), psychotherapy, electroconvulsive therapy (Schloesser et al., 2015) and phototherapy (Golden et al., 2005) are used effectively in the treatment of depression, which is among the most important diseases of our age, it has been stated that sports / exercise is used as an alternative treatment

method for these diseases (Mead et al., 2008; Ströhle, 2009; Fariz, 2015; Jeong et al., 2016).

It has been revealed in the researches that doing sports/exercise regularly reduce the depression level (Perraton et al., 2010; Aylaz et al., 2011; Stanton and Reaburn, 2014; Dik et al., 2016) and it is one of the mostly used treatment methods to cure depressed patients recently (Conn, 2010; Carek et al., 2011; Krogh et al., 2011).

Sports activities, music, sightseeing, cultural tours, reading books, different fine arts or social activities that support personal development will improve our healing from the psychological problems we have experienced and reduce the consumption of antidepressant drugs we have to use.

PURPOSE

Variation and change of today’s individual lifestyle from the past which includes differences from person to person shapes the way of life of individuals. The different negative and personal problems experienced each day reveal the psychological and sociological problems and internal struggle of individuals. This situation increases individuals’ need for psychological, psychiatric and sociological support and in some cases increases their antidepressant drug consumption. In this study, a research and application has been carried out for OECD countries and data belonging

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to the years 2010 and 2018 have been compiled and analyzed with different analysis methods in line with the obtained data. The aim of the study was to analyze antidepressant sales volume and consumption and to compare consumption between men and women.

LIMITATIONS of RESEARCH

Data belonging to the data of OECD countries were used in the study. These data only belong to the years 2010 and 2018. The limitations of the research include men and women, consumption and sales volume.

CONTRIBUTION to LITERATURE

In the new studies to be conducted in the field, the causalities of the relationship between sales and consumption amount and the perceived effect of health perception level on women and men were examined with different analysis techniques. The findings obtained indicate that which fields and reasons are concentrated in future researches. This situation has a significant impact on the researchers' perspective on the field and causality and provides guidance. This study provides a new contribution to the literature on statistics and causality analyzes and it also suggests that different methods can be used for field researchers.

METHOD

In this study, the relationship between the health variables was determined in four ca-

tegories belonging to the OECD countries as obtained from the website of OECD. These variables are as follows;

- Sales volume of antidepressants
- Consumption amount of antidepressants
- Perceived health level (good/very good) – Female
- Perceived health level (good/very good) – Male

SCOPE

Annual data between 2010 and 2018 were analyzed in this study. Data were compiled for 36 OECD countries.

FINDINGS and ANALYSIS

Eviews 8 software was used in this analysis. Basic statistics were used to obtain summary information about variables. Unit root analysis was used to test whether variables have unit roots and therefore can be used in long-term analysis. Granger Causality analysis was used to determine the direction of the relationship between the variables. Regression analysis was used to determine the direction and magnitude of the relationship between the dependent variable and the independent variable. All statistical analyzes were tested at 0.05 significance level.

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BASIC INFORMATION RELATED to OECD HEALTH STATISTICS

Antidepressant sales are highest in Canada among OECD countries. The first three co-

untries are Canada, Iceland and Spain while the last three are Latvia, New Zealand and Mexico respectively.

Antidepressant consumption amount is highest in Iceland among OECD countries. The first three countries are Iceland, Canada and

Australia respectively while the last three countries are Hungary, Korea and Latvia.

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Perceived health level (good / very good) of females is highest in New Zealand among OECD countries. The first three countries are

New Zealand, Canada and the United States respectively while the last three countries are Lithuania, Latvia and Korea respectively.

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Perceived health level (good / very good) of males is highest in Canada among OECD countries. The first three countries are Canada,

the United States and New Zealand respectively while the last three countries are Latvia, Lithuania and Korea respectively.

UNIT ROOT ANALYSIS

ANTIDEPRESSANT SALES VOLUME UNIT ROOT ANALYSIS RESULTS

According to the unit root analysis, H0 hypothesis is rejected due to the fact that probabi-

lity values are bigger than confidence level of 0.05. Thus, it has been determined that antidepressant sales volume does not contain unit root; therefore, it can be used in future analyses.

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Panel unit root test: Summary

Series: SALES

Sample: 2010 2018

Exogenous variables: Individual effects

Newey-West automatic bandwidth selection and Bartlett kernel

		Cross-		
Method	Statistic	Prob.**	secti- ons	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.51005	0.0000	28	198

Null: Unit root (assumes individual unit root process)

ANTIDEPRESSANT CONSUMPTION AMOUNT UNIT ROOT ANALYSIS RE- SULTS

According to the unit root analysis, H0 hypothesis is rejected due to the fact that probabi-

lity values are bigger than confidence level of 0.05. Thus, it has been determined that antidepressant consumption amount does not contain unit root; therefore, it can be used in future analyses.

Panel unit root test: Summary

Series: CONSUMPTION

Sample: 2010 2018

Exogenous variables: Individual effects

Newey-West automatic bandwidth selection and Bartlett kernel

		Cross-		
Method	Statistic	Prob.**	secti- ons	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.12469	0.0168	28	191

Null: Unit root (assumes individual unit root process)

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PERCEIVED HEALTH LEVEL UNIT ROOT ANALYSIS RESULTS

According to the unit root analysis, H0 hypothesis is rejected due to the fact that probabi-

lity values are bigger than confidence level of 0.05. Thus, it has been determined that perceived happiness level for both genders does not contain unit root and so, it can be used in future analyses.

Panel unit root test: Summary

Series: FEMALES

Sample: 2010 2018

Exogenous variables: Individual effects

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross- secti- ons	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.80852	0.0000	32	228

Null: Unit root (assumes individual unit root process)

Panel unit root test: Summary

Series: MALES

Sample: 2010 2018

Exogenous variables: Individual effects

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross- secti- ons	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.94938	0.0000	32	228

Null: Unit root (assumes individual unit root process)

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CAUSALITY ANALYSIS

The causality analysis between the variables of OECD health statistics was examined with Granger test. The main hypothesis states that there is no causality between two series.

The findings below were obtained following the analysis.

- Antidepressant sales volume is a reason for consumption amount.
- Good/very good perceived health level of females is a reason for the antidepressant consumption amount.
- Good/very good perceived health level of males is not a reason for the antidepressant consumption amount.

Pairwise Granger Causality Tests

Sample: 2010 2018

Null Hypothesis:	Obs	F-Statistic	Prob.
CONSUMPTION does not Granger Cause SALES	142	1.28194	0.2808
SALES does not Granger Cause CONSUMPTION		3.80487	0.0247
FEMALES does not Granger Cause SALES	140	1.02194	0.3627
SALES does not Granger Cause FEMALES		0.88584	0.4148
MALES does not Granger Cause SALES	140	0.93433	0.3954
SALES does not Granger Cause MALES		1.17831	0.3109
FEMALES does not Granger Cause CONSUMPTION	142	3.94858	0.0215
CONSUMPTION does not Granger Cause FEMALES		0.21763	0.8047
MALES does not Granger Cause CONSUMPTION	142	1.60242	0.2052
CONSUMPTION does not Granger Cause MALES		0.42224	0.6564
MALES does not Granger Cause FEMALES	196	0.48715	0.6151
FEMALES does not Granger Cause MALES		0.25264	0.7770

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REGRESSION ANALYSIS

REGRESSION ANALYSIS BETWEEN ANTIDEPRESSANT SALES VOLUME and PERCEIVED HEALTH LEVEL

- One unit of increase in antidepressant sales volume leads to 4.56 units of increase in perceived good/very good health levels of females.

Dependent Variable	Independent Variable	Coefficient	Std. Error	t-Statistic	Prob.
FEMALE HEALTH	SALES	4.560732	0.179650	25.38682	0.0000

REGRESSION ANALYSIS BETWEEN ANTIDEPRESSANT SALES VOLUME and PERCEIVED HEALTH LEVEL

- One unit of increase in antidepressant sales volume leads to 4.87 units of increase in perceived good/very good health levels of males.

Dependent Variable	Independent Variable	Coefficient	Std. Error	t-Statistic	Prob.
MALE HEALTH	SALES	4.877629	0.194137	25.12469	0.0000

REGRESSION ANALYSIS BETWEEN ANTIDEPRESSANT CONSUMPTION AMOUNT and PERCEIVED HEALTH LEVEL

- One unit of increase in antidepressant consumption amount leads to 0.99 units of increase in perceived good/very good health levels of females.

Dependent Variable	Independent Variable	Coefficient	Std. Error	t-Statistic	Prob.
FEMALE HEALTH	CONSUMPTION	0.990031	0.025563	38.72981	0.0000

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REGRESSION ANALYSIS BETWEEN ANTIDEPRESSANT CONSUMPTION AMOUNT and PERCEIVED HEALTH LEVEL

- One unit of increase in antidepressant consumption amount leads to 1.06 units of increase in perceived good/very good health levels of males.

Dependent Variable	Independent Variable	Coefficient	Std. Error	t-Statistic	Prob.
MALE HEALTH	CONSUMPTION	1.060557	0.028570	37.12076	0.0000

CONCLUSION

In the comparative study performed to determine antidepressant sales volume, consumption and health perception for males and females, antidepressant sales volume was realized to be highest in Canada among OECD countries and the consumption amount was found to be highest in Iceland. Perceived health level (good/very good) of females is the highest in New Zealand and highest in Canada for males among the OECD countries. Regarding antidepressant sales and consumption, it was found that the antidepressant sales volume and the perceived good/very good health level of females were a reason for the amount of antidepressant consumption while the perceived good/very good health level of males was not a reason for the antidepressant consumption amount. According to the regression analysis results, it has been established that one unit of increase in antidepressant

sales volume leads to 4.56 units of increase in perceived good/very good health level of females and 4.87 units of increase in perceived good/very good health level of males while one unit of increase in consumption amount leads to 0.99 units of increase in perceived good/very good health level of females. As a result of the unit root analysis applied in the study, it has been concluded that antidepressant sales volume and consumption amount and perceived happiness level for both genders do not contain unit root; thus, they can be used in future analyses.

- Antidepressant sales are highest in Canada among the OECD countries.
- Antidepressant consumption amount is highest in Iceland among OECD countries.
- Perceived health level (good / very good) of females is highest in New Zealand among OECD countries.

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- Perceived health level (good / very good) of males is highest in Canada among OECD countries.
- Antidepressant sales volume does not contain unit root; therefore, it can be used in future analyses.
- Antidepressant consumption amount does not contain unit root; therefore, it can be used in future analyses.
- Perceived happiness level for both genders does not contain unit root and so, it can be used in future analyses.
- Antidepressant sales volume is a reason for consumption amount. Good/very good perceived health level of females is a reason for the antidepressant consumption amount. Good/very good perceived health level of males is not a reason for the antidepressant consumption amount.
- One unit of increase in antidepressant sales volume leads to 4.56 units of increase in perceived good/very good health levels of females.
- One unit of increase in antidepressant sales volume leads to 4.87 units of increase in perceived good/very good health levels of males.
- One unit of increase in antidepressant consumption amount leads to 0.99 units

of increase in perceived good/very good health levels of females.

- One unit of increase in antidepressant consumption amount leads to 1.06 units of increase in perceived good/very good health levels of males.

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