



Review Article

Association of Ageism and Empathy in Young Adults

Keri Diez Larsen*, Myia Graves, Ashley Bowers, Lusine Nahapetyan, Valerie Saba, Lauren Himel and Preyu Apulu

Department of Kinesiology and Health Studies, Southeastern Louisiana University, Louisiana, USA

Abstract

The purpose of this study was to examine the association between empathy and ageism among undergraduate students. A cross-sectional survey of undergraduate students was conducted at a midsize university in the Southeastern region of the United States. The sample consisted of 253 non-randomly selected students (mean age 20.75 years; 38.2% males; 62.4% White, 27.2% Black, 9.7% Other). Fifteen percent of students had taken a course on ageing. Approximately half of the sample (48.1%) were Freshmen, 16.4% Sophomore, 13.4% Junior and 21.5% Senior. The Fraboni Scale of Ageism and the Toronto Empathy questionnaire were used to measure ageism and empathy. Chi-square tests, t-tests, and multiple linear regression were used for analyses. Our findings showed that males had higher levels of ageism (difference = 0.23, $p < 0.001$) and lower levels of empathy (mean difference = - 4.85, $p < 0.001$) compared to females. After controlling for the effects of demographic variables, there were significant associations between empathy and the total ageism scores ($\beta = -0.028$, $p < 0.001$). Additionally, there were significant associations between empathy and the three subscales of Fraboni Scale of Ageism: Antilocution ($\beta = -0.027$, $p < 0.001$), Discrimination ($\beta = -0.031$, $p < 0.001$), and Avoidance ($\beta = -0.028$, $p < 0.001$). There were no significant associations between ageism and race, age, and taking a course on ageing. In young adults, gender and low levels of empathy were strong predictors of ageism and corresponding negative attitudes towards older adults. Further research should examine if there are other shared characteristics in the pathway between empathy and ageism in young adults.

*Corresponding author: Keri Diez Larsen, Department of Kinesiology and Health Studies, Southeastern Louisiana University, Louisiana, USA, Tel: +1 9855493800; E-mail: keri.larsen@selu.edu

Citation: Larsen KD, Graves M, Bowers A, Nahapetyan L, Saba V, et al. (2021) Association of Ageism and Empathy in Young Adults. J Gerontol Geriatr Med 7: 111.

Received: November 15, 2021; Accepted: November 23, 2021; Published: November 30, 2021

Copyright: © 2021 Larsen KD, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Introduction

Stereotyping or discrimination of someone due to age is known as ageism. The extreme mistreatment of someone due to their age culminates in many different ways. This can follow the same feelings and outcomes as that of sexism, racism, or any type of discrimination. "Age-ism might parallel racism as the great issue" [1] in the coming decades. Ageism can affect people well into the later years of life and how those years are lived [2]. It has been established that we are having a rise in older adults, also a rise in the age of average death, which leads to an increase in older adults that will be needing care for longer periods. The quality of life for older adults has become an increasing concern for those that love and care for them and healthcare providers. People are staying fit and active, working, and even getting an education at an older age. 60% of those over the age of 65 years old have experienced ageism in the workplace [3]. In a study using the Social Closure Theory, it was observed that older students were exposed to ageism regularly. Also, neglect was shown in terms of their learning interests with most opportunities aimed at the younger student [4].

In 2020, the American Psychological Association discussed ageism and how it affects a person's physical and mental health. In a survey by Duke University, 80% of participants had experienced ageism in some way or form [5]. The effects of ageism can follow a person into death and how they view their death. In an article by Gamliel [6], the correlation between ageism and elder suicide acceptance was mentioned. The results showed those that participated in ageism were more likely to understand and be accepting of the act of suicide (2016). The epidemic of ageism is ever-increasing. Empathy is attempting to feel what someone else is feeling on their level. Empathy is a critical skill in navigating daily life. Ageism is influenced because many people believe that empathy is effortful. Empathy promotes cooperation amongst different demographics. Studies have shown empathy toward the older population can combat ageism [7].

Literature Review

Ageist attitudes are more commonly seen among young and middle-aged adults. Bodner, Berman, and Cohen-Fridel [8] studied ageism attitudes from a broad group of participants between the ages of 18 to 98 years old. In this study, participants were separated into three groups based on their age: young adulthood, middle-aged, and old age. It was found that middle-aged adults are more ageist compared to younger and older adults. However, the younger groups tend to be more avoidant towards older adults compared to other groups. Yilmaz, Kisa, and Zeyneloglu [9] surveyed undergraduate students at a Turkish University on their views of ageist statements and ageist practices towards older adults. The undergraduate students did view ageist statements as a form of discrimination. Students in this study mentioned not spending time with older adults because it is boring, teasing older adults for wearing colorful clothes, and ignoring their life experiences. However, the majority of the students still practice these discriminatory behaviors in their daily lives. Yilmaz and his colleagues found that these behaviors were highly contradictory [9].

The capabilities displayed by an older adult can contribute to younger adult views on ageism. Bergman and Bodner [10] wanted to see how an undergraduate student's ageist attitudes were influenced by individual physical capabilities and their compassion towards them. The study showed that increasing an individual's ageist attitude puts more distance between the older adult and themselves. Furthermore, people with higher ageist attitudes show less concern toward older people and have less belief in their skills to help older adults. Bergman and Bodner [10] inferred that young adults' ageist views hinder them from experiencing positive emotions towards an older adult, who may show signs of incapacitated behaviors and need assistance.

There are some factors related to the development of ageist views by young adults. For instance, Boswell [11] studied how potential factors affect undergraduate students' ageism. The undergraduate students were training to work in the allied health and mental health fields. The study investigated the impact of aging, anxiety, contact with older adults, and compassion toward older adults on ageism. It was found that when an individual has higher knowledge about aging, a higher level of compassion, and low anxiety about aging, ageist attitudes are reduced. Bodner, Berman, and Cohen-Fridel [8] found that men were significantly more ageist than women. It was also found that females have lower ageism attitudes and views. These studies have shown that gender can be a determining factor in a person's ageism attitudes.

Furthermore, it was found that college students with increased interactions with older adults showed less ageist attitudes. Also, the experience of living with an older adult can lower ageist attitudes. The researchers suggested promoting intergenerational living to reduce ageist attitudes and strengthen the relationship between the two age groups. A meta-analysis was performed to determine what types of interventions help reduce ageism among youth and adults. Three types of interventions were education, intergenerational contact, and combined education and intergenerational contact. All three types of interventions had a significant effect on ageist attitudes, knowledge, and comfort. When the interventions include intergenerational contact and educational factors, they substantially have an impact on negative attitudes towards aging [12].

Methods

Design and procedures

We conducted a cross-sectional survey of undergraduate students at a midsize Southern University ranging in age from 18 - 24 years of age. Data was collected with paper-and-pencil surveys administered by one of the researchers who were available to answer any questions from the participants. The University's Institutional Review Board approved the research activities. Participants signed an informed consent form. Participants did not receive incentives for their participation.

Measures

The survey consisted of: 1) demographic information; 2) a scale measuring empathy; and 3) a scale measuring ageism. Demographic characteristics included age, gender, race, classification in college (freshmen, junior, sophomore, senior) and taking a course on ageing. Toronto Empathy Questionnaire (16 items) [13] was used to measure empathy. The Toronto Empathy Questionnaire (TEQ) is a brief 16 item instrument and has demonstrated high test-retest reliability, high internal consistency, and strong convergent validity for the

assessment of empathy. Examples of questions were: "It upsets me to see someone being treated disrespectfully," "I can tell when others are sad even when they do not say anything." Response categories were measured using a Likert scale, ranging from "Never" to "Always". The responses were coded: Never = 0; Rarely = 1; Sometimes = 2; Often = 3; Always = 4. Negatively worded items were reverse coded. The total score for the TEQ was calculated as a sum of all items with a possible range from 0 to 64. Higher scores indicate higher levels of empathy. Further, the internal consistency of the scale scores were high (Cronbach's alpha = 0.81).

Fraboni Scale of Ageism (29 items) [14] was used to measure attitudes towards ageing and the aged. The Fraboni Scale of Ageism (FSA) is a 29-item instrument with three subscales: Antilocution, Avoidance and Discrimination. According to Fraboni and colleagues [14], Antilocution represents antagonism and antipathy against older adults. Examples of Antilocution questions are: "Many old people are stingy and hoard their possessions," and "Old people complain more than other people do". Avoidance construct represents withdrawal from social contact with older adults. Examples of Avoidance questions are: "I don't like it when old people try to make conversation with me," and "Old people should find friends their own age". Discrimination captures discriminatory attitudes related to the political rights, segregation and activities of older adults. Examples of Discrimination questions are: "Old people deserve the same rights and freedoms as do other members of our society," and "It is best that old people live where they won't bother anyone." Response categories are measured with a Likert scale, ranging from "Strongly Disagree" to "Strongly Agree". The responses were coded: Strongly Disagree = 1; Disagree = 2; Neutral = 3; Agree = 4; Strongly Agree = 5. Negatively worded items were reverse coded. The total scale score was calculated as the mean of all items. Additionally, scores were calculated as the mean of items for each of the subscales. Higher scores indicate higher levels of ageism. The internal consistency of the scale scores in this study measured by Cronbach's alpha was 0.77 for Antilocution, 0.67 for Avoidance and 0.69 for Discrimination. The internal consistency for the total scale was 0.86.

Analyses

Frequency analyses and descriptive statistics (mean, median, standard error and range) were used to assess the distribution of the scale scores. Internal consistency of scale scores (reliability analysis) was assessed by using Cronbach's alpha. Chi-square and t-tests were used to examine univariate associations. We used multiple linear regression to determine if empathy is a significant predictor of ageism, after controlling for the effects of possible confounders (age, gender, race, taking a course on aging, classification in college). Stepwise selection (entry $p = 0.05$ and removal $p = 0.1$) was used to eliminate the non-significant variables. There was little missing data on various measures. We did not impute missing data.

Results

Descriptive results

The study sample consisted of 372 non-randomly selected students (mean age 20.75 years, $SD=4.1$; 38.2% males, 61.8% females; 62.4% White, 27.2% Black, 5.1% Latino, 3.0% Asian and 1.6% other). Fifteen percent of students had taken a course on ageing. Approximately half of the sample (48.1%) were Freshmen, 16.4% Sophomore, 13.4% Junior and 21.5% Senior. The distribution of the ageism and empathy scores are summarized in table 1. The empathy scores

ranged from 24 to 63, with the average of 46.69 and SD = 7.4. The total ageism scores ranged from 1.17 to 3.38, with the average of 2.27 and SD = 0.43.

	N	Mean	SD	Range
Ageism Total Score	367	2.2696	0.43	1.2 - 3.4
Ageism Avoidance Score	368	2.3210	0.47	1.0 - 3.6
Ageism Discrimination Score	365	2.0932	0.47	1.0 - 3.4
Ageism Antilocution Score	368	2.3803	0.57	1.0 - 3.9
Empathy	370	46.7	7.4	24.0 - 63.0

Table 1: Distribution of the Ageism and Empathy Scores.

Univariate associations

There were significant correlations between empathy and ageism scores. Higher empathy scores were negatively correlated with total ageism scores ($r = -.517, p < 0.001$), Antilocution scores ($r = -.379, p < 0.001$), Discrimination scores ($r = -.527, p < 0.001$), Avoidance scores ($r = -.459, p < 0.001$). Additionally, participants' age was significantly and negatively correlated with Antilocution ($r = -.120, p = 0.021$). Age was not correlated with Total ageism, Discrimination, Avoidance and empathy (likely due to low variation in age among the participants).

According to t-test results, there were significant gender differences in empathy and ageism scores between males and females. Males had significantly higher ageism scores in total ageism (mean difference = 0.23, $p < 0.001$), and Antilocution (mean difference = .25, $p < 0.001$), Discrimination (mean difference = 0.26, $p < 0.001$) and Avoidance (mean difference = 0.20, $p < 0.001$). Similarly, there were significant gender differences in empathy between males and females. Men had significantly lower empathy levels compared to females (mean difference = -4.85, $t = -6.45, d.f. = 367, p < 0.001$). Men had average empathy scores = 43.7 compared to women's mean empathy scores of 48.55.

There were no significant differences in the total ageism and subscale scores between the students who took a course on ageing ($n=55$) compared to students who did not take a course on ageing ($n = 312$). The reason for the lack of difference could have been that the number of students who had courses on aging was considerably smaller than students who did not take a course on aging. According to one-way ANOVA results there were no significant associations between student classification, race and ageism total or any subscales of ageism.

Multivariate associations

The multiple regression analyses results showed that gender and empathy were significant predictors of total ageism scores. Adjusted R-square for this model was 0.273. After controlling the effects of demographic variables (age, gender, course on ageing, classification, race), empathy was a significant predictor of total ageism scores. Students with higher empathy were less likely to have negative ageism attitudes ($\beta = -0.028, p < 0.001$) (Table 2).

Similarly, after controlling the effects of demographic variables, empathy was a significant predictor of Ageism Antilocution scores ($\beta = -0.027, p < 0.001$). Adjusted R-square for this model was 0.161. Additionally, age was a significant predictor for antilocution - with increasing age the Antilocution declined (Table 3).

After controlling the effects of demographic variables, empathy was a significant predictor of Ageism Discrimination scores ($\beta = -0.031, p < 0.001$). Adjusted R-square for this model was 0.278.

Model	Coefficients			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	3.916	0.171		22.904	0.000
Empathy	-0.028	0.003	-0.481	-10.167	0.000
Gender	-0.086	0.042	-0.097	-2.034	0.043
Classification	-0.003	0.019	-0.007	-0.14	0.889
Age	-0.008	0.005	-0.077	-1.48	0.140
Race	0.026	0.022	0.054	1.199	0.231
Course on Aging	-0.027	0.016	-0.079	-1.716	0.087

Model with non-significant variables removed

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.746	0.127		29.552	0.000
Empathy	-0.028	0.003	-0.483	-10.255	0.000
Gender	-0.094	0.042	-0.105	-2.235	0.026

Table 2: Predictors of total ageism scores among undergraduate students.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.266	0.235		18.131	0.000
Empathy	-0.027	0.004	-0.345	-6.819	0.000
Gender	-0.105	0.060	-0.089	-1.758	0.080
Age	-0.019	0.007	-0.135	-2.761	0.006
Course on Aging	-0.041	0.022	-0.090	-1.848	0.065

Table 3: Predictors of antilocution ageism scores among undergraduate students.

Additionally, gender was a significant predictor for discrimination: males had higher discrimination compared to females (Table 4).

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Std. Error	Beta			
(Constant)	3.765	0.184		20.445	0.000
Empathy	-0.031	0.003	-0.489	-10.341	0.000
Gender	-0.102	0.046	-0.106	-2.239	0.026
Classification	-0.012	0.020	-0.030	-0.574	0.566
Age	-0.001	0.006	-0.009	-0.171	0.864
Race	0.029	0.023	0.057	1.257	0.210
Course on Aging	-0.022	0.017	-0.060	-1.318	0.188

Table 4: Predictors of discrimination ageism scores among undergraduate students.

After controlling the effects of demographic variables, empathy was a significant predictor of Ageism Avoidance scores ($\beta = -0.028, p < 0.001$). Adjusted R-square for this model was 0.199 (Table 5).

Model B	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Std. Error	Beta			
(Constant)	3.800	.196		19.430	.000
Empathy1	-0.028	0.003	-0.434	-8.755	0.000
Gender	-0.056	0.048	-0.057	-1.150	0.251
Classification	0.017	0.021	0.043	0.780	0.436
Age	-0.005	0.006	-0.046	-0.839	0.402
Race	0.011	0.025	0.020	0.430	0.668
Course on Aging	-0.014	0.018	-0.038	-0.801	0.423

Table 5: Predictors of avoidance ageism scores among undergraduate students.

Discussion

Intergenerational contact, activation of positive stereotypes, and self-affirmation are all tools that can be used to overcome negative opinions of aging among people of all ages. Difficulties associated with ageism can be overcome, if research is furthered to effectively conceptualize, detect, measure, and understand the multidimensionality and complexity of ageism. It is important to note that results showed a higher empathy score associated with lower negative ageist attitudes.

The results of this study show that more empathetic students are less ageist. This study affirms that males are less empathetic than females because of the correlation between empathy and ageism [8]. Results suggest that because males were less empathetic then they could be more ageist. To halt ageism in our society, empathetic behaviors must be taught and encouraged during childhood and adolescence. Empathy is closely related to morality based on social context and empathy is greatly affected by parental concepts and kinships [15]. Empathy is an important antecedent and motivator for prosocial and anti-ageist behavior.

The use of modern technology has stunted the empathetic growth of many children, adolescents, and youth, leading to adults that lack empathy and commonly display ageist attitudes. Lack of empathy can lead to conflict [16]. Implementing empathy education to various educational curriculums can be useful in combating ageist attitudes [17]. With the advancement of technology, we suggest that alternative and innovative methods be used to encourage empathy. These methods can include video games, children's books, and television shows, etc. The relationship between ageism and empathy can help us understand why ageism is so widespread. Using a more diverse sample of students can help us understand the relationship between empathy and ageism in other diverse populations. Ageism is a widespread, variant issue and that is dependent on many cultural factors. The sample for this study only included students from a mid-sized university in the Southern region of the United States, the sample population is a limitation in this study because it does not represent a diverse population.

Conclusion

Only few studies have addressed the consequences of ageism while none have addressed possible interventions [18]. This illustrates a definitive knowledge gap in the literature about this important issue. Increased interactions between the older and younger populous can lead to a decrease in ageist attitudes among the younger population. It is imperative that increased interactions between older adults and

young children be encouraged. These increased interactions could be accomplished through children's literature, fostering grandparents and even curriculum changes with this concept in mind.

Furthermore, exposure and interaction with older adults leads to a deeper understanding of gender roles. Empathy can be taught; implementing a curriculum that focuses on teaching people how to be more empathetic. Incorporating such a curriculum into the academic coursework of students could potentially help students become more empathetic and in turn less ageist. Future studies could assess the correlation between ageism and empathy in different populations across different cultures. Creating awareness and understanding about ageism, educating students and the general public about the negative effects of ageism can create a world in which ageism is eliminated.

References

- Butler RN (1969) Age-ism: Another form of bigotry. *Gerontologist* 9: 243-246.
- Robertson G (2016) Attitudes towards ageing and their impact on health and wellbeing in later life: an agenda for further analysis. *Working with Older People* (Vol-20).
- AARP (2019) Workplace Age Discrimination Still Flourishes in America. AARP, USA.
- Simi D, Matusitz J (2016) Ageism Against Older U.S. College Students: A View from Social Closure Theory. *Interchange* 47: 391-408.
- Dittmann M (2003) Fighting ageism. *Monitor on Psychology* 34: 50.
- Gamliel E, Levi-Belz Y (2016) To end life or to save life: ageism moderates the effect of message framing on attitudes towards older adults' suicide. *Int Psychogeriatr* 28: 1383-1390.
- Boudjemad V, Gana K (2009) Ageism: Adaptation of the Fraboni of Ageism Scale-Revised to the French language and testing the effects of empathy, social dominance orientation and dogmatism on ageism. *Can J Aging* 28: 371-389.
- Bodner E, Bergman YS, Cohen-Fridel S (2012) Different dimensions of ageist attitudes among men and women: A multigenerational perspective. *Int Psychogeriatr* 24: 895-901.
- Yilmaz D, Kisa S, Zeyneloglu S (2012) University students' views and practices of ageism. *Ageing International* 37: 143-154.
- Bergman YS, Bodner E (2015) Ageist attitudes block young adults' ability for compassion toward incapacitated older adults. *Int Psychogeriatr* 27: 1541-1550.
- Boswell SS (2012) Predicting trainee ageism using knowledge, anxiety, compassion, and contact with older adults. *Educational Gerontology* 38: 733-741.
- Burnes D, Sheppard C, Henderson CR Jr, Wassel M, Cope R, et al. (2019) Interventions to reduce ageism against older adults: A systematic review and meta-analysis. *Am J Public Health* 109: 1-9.
- Spreng RN, McKinnon MC, Mar RA, Levine B (2009) The Toronto Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. *J Pers Assess* 91: 62-71.
- Fraboni M, Saltstone R, Hughes S (1990) The Fraboni Scale of Ageism (FSA): An Attempt at a More Precise Measure of Ageism. *Canadian journal on aging* 9: 56-66.
- Decety J (2015) The neural pathways, development and functions of empathy. *Current Opinion in Behavioral Sciences* 3: 1-6.
- Manney PJ (2008) Empathy in the Time of Technology: How Storytelling is the Key to Empathy. *Journal of Evolution and Technology* 19: 51-61.

17. Wu L, Kim M, Markauskaite L (2020) Developing young children's empathic perception through digitally mediated interpersonal experience: Principles for a hybrid design of empathy games. British Journal of Educational Technology 51: 1168-1187.
18. São José JM, Amado CA (2017) On studying ageism in long-term care: A systematic review of the literature. Int Psychogeriatr 29: 373-387.



- Advances In Industrial Biotechnology | ISSN: 2639-5665
- Advances In Microbiology Research | ISSN: 2689-694X
- Archives Of Surgery And Surgical Education | ISSN: 2689-3126
- Archives Of Urology
- Archives Of Zoological Studies | ISSN: 2640-7779
- Current Trends Medical And Biological Engineering
- International Journal Of Case Reports And Therapeutic Studies | ISSN: 2689-310X
- Journal Of Addiction & Addictive Disorders | ISSN: 2578-7276
- Journal Of Agronomy & Agricultural Science | ISSN: 2689-8292
- Journal Of AIDS Clinical Research & STDs | ISSN: 2572-7370
- Journal Of Alcoholism Drug Abuse & Substance Dependence | ISSN: 2572-9594
- Journal Of Allergy Disorders & Therapy | ISSN: 2470-749X
- Journal Of Alternative Complementary & Integrative Medicine | ISSN: 2470-7562
- Journal Of Alzheimers & Neurodegenerative Diseases | ISSN: 2572-9608
- Journal Of Anesthesia & Clinical Care | ISSN: 2378-8879
- Journal Of Angiology & Vascular Surgery | ISSN: 2572-7397
- Journal Of Animal Research & Veterinary Science | ISSN: 2639-3751
- Journal Of Aquaculture & Fisheries | ISSN: 2576-5523
- Journal Of Atmospheric & Earth Sciences | ISSN: 2689-8780
- Journal Of Biotech Research & Biochemistry
- Journal Of Brain & Neuroscience Research
- Journal Of Cancer Biology & Treatment | ISSN: 2470-7546
- Journal Of Cardiology Study & Research | ISSN: 2640-768X
- Journal Of Cell Biology & Cell Metabolism | ISSN: 2381-1943
- Journal Of Clinical Dermatology & Therapy | ISSN: 2378-8771
- Journal Of Clinical Immunology & Immunotherapy | ISSN: 2378-8844
- Journal Of Clinical Studies & Medical Case Reports | ISSN: 2378-8801
- Journal Of Community Medicine & Public Health Care | ISSN: 2381-1978
- Journal Of Cytology & Tissue Biology | ISSN: 2378-9107
- Journal Of Dairy Research & Technology | ISSN: 2688-9315
- Journal Of Dentistry Oral Health & Cosmesis | ISSN: 2473-6783
- Journal Of Diabetes & Metabolic Disorders | ISSN: 2381-201X
- Journal Of Emergency Medicine Trauma & Surgical Care | ISSN: 2378-8798
- Journal Of Environmental Science Current Research | ISSN: 2643-5020
- Journal Of Food Science & Nutrition | ISSN: 2470-1076
- Journal Of Forensic Legal & Investigative Sciences | ISSN: 2473-733X
- Journal Of Gastroenterology & Hepatology Research | ISSN: 2574-2566
- Journal Of Genetics & Genomic Sciences | ISSN: 2574-2485
- Journal Of Gerontology & Geriatric Medicine | ISSN: 2381-8662
- Journal Of Hematology Blood Transfusion & Disorders | ISSN: 2572-2999
- Journal Of Hospice & Palliative Medical Care
- Journal Of Human Endocrinology | ISSN: 2572-9640
- Journal Of Infectious & Non Infectious Diseases | ISSN: 2381-8654
- Journal Of Internal Medicine & Primary Healthcare | ISSN: 2574-2493
- Journal Of Light & Laser Current Trends
- Journal Of Medicine Study & Research | ISSN: 2639-5657
- Journal Of Modern Chemical Sciences
- Journal Of Nanotechnology Nanomedicine & Nanobiotechnology | ISSN: 2381-2044
- Journal Of Neonatology & Clinical Pediatrics | ISSN: 2378-878X
- Journal Of Nephrology & Renal Therapy | ISSN: 2473-7313
- Journal Of Non Invasive Vascular Investigation | ISSN: 2572-7400
- Journal Of Nuclear Medicine Radiology & Radiation Therapy | ISSN: 2572-7419
- Journal Of Obesity & Weight Loss | ISSN: 2473-7372
- Journal Of Ophthalmology & Clinical Research | ISSN: 2378-8887
- Journal Of Orthopedic Research & Physiotherapy | ISSN: 2381-2052
- Journal Of Otolaryngology Head & Neck Surgery | ISSN: 2573-010X
- Journal Of Pathology Clinical & Medical Research
- Journal Of Pharmacology Pharmaceutics & Pharmacovigilance | ISSN: 2639-5649
- Journal Of Physical Medicine Rehabilitation & Disabilities | ISSN: 2381-8670
- Journal Of Plant Science Current Research | ISSN: 2639-3743
- Journal Of Practical & Professional Nursing | ISSN: 2639-5681
- Journal Of Protein Research & Bioinformatics
- Journal Of Psychiatry Depression & Anxiety | ISSN: 2573-0150
- Journal Of Pulmonary Medicine & Respiratory Research | ISSN: 2573-0177
- Journal Of Reproductive Medicine Gynaecology & Obstetrics | ISSN: 2574-2574
- Journal Of Stem Cells Research Development & Therapy | ISSN: 2381-2060
- Journal Of Surgery Current Trends & Innovations | ISSN: 2578-7284
- Journal Of Toxicology Current Research | ISSN: 2639-3735
- Journal Of Translational Science And Research
- Journal Of Vaccines Research & Vaccination | ISSN: 2573-0193
- Journal Of Virology & Antivirals
- Sports Medicine And Injury Care Journal | ISSN: 2689-8829
- Trends In Anatomy & Physiology | ISSN: 2640-7752

Submit Your Manuscript: <https://www.heraldopenaccess.us/submit-manuscript>