# HSOA Journal of
# Reproductive Medicine, Gynaecology & Obstetrics

**Research Article**

# Prognosis of Childbirth at the Extreme Ages of Reproductive Life

**Balde Ibrahima Sory¹\*, Balde Ousmane², Diallo Fatoumata Bamba², Sylla Ibrahima¹, Diallo Ibrahima Tangaly¹, Conde Joseph Gbamou¹, Sy Telly¹ and Keita Namory²**

¹Department of Gynecology and Obstetrics, Ignace Deen National Hospital, Gamal Abdel Nasser University of Conakry, Conakry CHU, Guinea

²Department of Gynecology and Obstetrics, Donka National Hospital, Conakry CHU, Guinea

## Abstract

**Introduction:** Childbirth of women at extreme ages is a risk factor for maternal and newborn morbidity and mortality. The objective of this study was to test the hypothesis that the outcome of childbirth is comparable to the extreme ages of reproductive life.

**Methodology:** This was a descriptive and analytical type prospective study lasting 6 months from October 1, 2019 to March 31, 2020, carried out at the maternity hospital of the Ignace Deen National Hospital (CHU of Conakry) Guinea; study of a continuous series of parturients at extreme ages.

**Results:** The study involved 716 deliveries in women at the extreme ages of reproductive life out of a total of 2967 deliveries, a frequency of 24%. The average age was 17.93 1.15 years for adolescent girls and 37.38 2.36 years for women 35 years and older. Adolescent girls were predominantly primiparous (82.13%) and elderly parturient women mostly multiparous (66.66%). Prenatal follow-up was adequate in the (2) groups (84.84% versus 89.06%). Risks were comparable in adolescent girls and women 35 and over, for example: prematurity (6.20% versus 5%), post-term (3.10% versus 3.57%) and stillbirth (4.86% versus 4.28%). Other risks are significantly higher in adolescent girls, namely: dystocia (13.12% versus 5.16%, cesarean delivery (39.36% versus 25.92%) and low birth weight (13.05% versus 5.16%). However, the risks are greatly increased in the elderly parturient, namely: uterine rupture (2.92% versus 1.15%); post-perfume hemorrhage (6.93% versus 3.16%) and fetal macrosomia (11.07% versus 3.54%). We recorded 4 maternal deaths among adolescent girls, i.e., a lethality of 9 and a death among elderly parturient, i.e., a lethality of 3.6.

**Conclusion:** At the end of this work, it appears that for certain risks, adolescent parturient and those 35 years of age are entirely comparable. Other risks are significantly increased by advanced age or adolescence alone. Specialized joint monitoring could be envisaged for these two (2) categories of the population, with particular emphasis on certain aspects specific to each group.

**Keywords:** Childbirth; extreme maternal ages; Guinea

**\*Corresponding author:** Balde Ibrahima Sory, Department of Gynecology and Obstetrics, Ignace Deen National Hospital, Gamal Abdel Nasser University of Conakry, Conakry CHU, Guinea, Tel: +00224 622269858; E-mail: baldeisory@yahoo.fr

## Introduction

Pregnancies at extreme ages of reproductive life are considered high-risk pregnancies [1]. Pregnancy outside the 19-34 age range is a risk factor for maternal and fetal mortality [2]. The literature reports high rates of complications of childbirth and pregnancy fate for these two (2) groups of women compared to those in their twenties [3].Theoretically on the basis of vascular prejudices marked by hypo arterialization evoked in adolescent [4] and decreased utero placental blood flow observed in elderly women [5] such as: cesarean delivery, stillbirth and intrauterine growth retardation. Other risks are significantly increased in adolescent girls, namely postterm, prematurity and acute fetal asphyxia; macrosomy, on the other hand, is more common in older parturients [6].

In industrialized countries, women give birth at an increasingly advanced age, in France the average maternal age at birth is 30 years. This increase in maternal age is multifactorial due to the transformation of family models and social norms: lengthening of the duration of studies, career choices, late union, financial reason and the availability of contraceptive means [7,8]. The report of the National Committee of Experts on Maternal Mortality (CNEMM) in France published in 2010, covering the period of deaths from 2001 to 2006, shows that the risk of maternal mortality is two (2) times higher from 15 to 19 years than from 20 to 29 years, three (3) times more than 35 to 39 years than 20 to 24 years, five to eight times more than 40 to 44 years and fifteen to thirty times more than 45 years. In 2012, the World Health Organization (WHO) [9] estimates that nearly 16 million girls under the age of 15 give birth worldwide each year. An assessment of the importance of risk between the two (2) groups can contribute to the planning of common obstetric care in order to prevent risks and reduce costs.

The aim of this work was to contribute to the study of the prognosis of childbirth at the extreme ages of reproductive life in a reference maternity in Guinea.

More specifically, they were:

- To describe the socio-demographic characteristics of women at the extreme ages of reproductive life
- Describe the complications of childbirth at the extreme ages of reproductive life
- To establish the maternal and fetal prognosis

## Patients and Methods

### Study

It was a descriptive and analytical prospective study lasting 6 months from 1 October 2019 to 31 March 2020; performed at the maternity ward of the Ignace Deen National Hospital (CHU de Conakry) in Guinea. The study involved a continuous series of 716 patients of extreme age admitted to the service for delivery regardless of the outcome of their pregnancy; Study comparing the two (2) populations involved: Women under 20 and women over 35. The data were collected from birth records, medical records and interviews in the patient's bed. The data was captured and analyzed using the SPSS software. For data analysis in the comparison of the two (2) populations, Pearson's chi-square was used with a significance threshold of 5% (p=0.05).

### Operational definitions

The study variables were:
a. Maternal age:

- **Advanced Age:** Any person whose age is 35 years or older
- **Young age:** Any person whose age is less than or equal to 19 years

b. Gestational age: delivery is said:

- **Premature:** if the term of pregnancy is less than 37 weeks of amenorrhea
- **Post-term:** if the term is greater than or equal to 42 weeks of amenorrhea

c. Other variables:

- Marital status, education level, parity, inter-reproductive interval (interval between two pregnancies), intake mode, NHC number, NHC location, maternal morbidity and mortality, fetal profile, fetal weight (macrosomy if fetal weight greater than 4000g; low birth weight if fetal weight less than 2500g); perinatal morbidity and mortality (sum of deaths after 28 weeks of amenorrhea; stillbirth rate and children dying during the first week equal early neonatal mortality) in relation to the total number of births.

**NB:** there was no conflict of interest.

## Results

### Frequency

During the study period, there were 716 births in women at the extreme ages of reproductive life out of a total of 2,967 births, or a frequency of 24% of all births, there were 732 newborns (16 twin pregnancies, of which 10 are adolescent and 6 are over the age of 35). Adolescent girls numbered 442 (15%) with an average age of 17.93 1.147 and extremes of 13 and 19 years. Women who gave birth after a late pregnancy (Age greater than or equal to 35 years) numbered 274 with an average age of 37.38 2.357 years and extremes of 35 and 47 years.

Socio-demographic characteristics (Table 1)

| Features | Age group | | | | Total | | P |
|---|---|---|---|---|---|---|---|
| | < 20 years | | >= 35 years | | | | |
| | Workforce | Percentage | Workforce | Percentage | Workforce | Percentage | |
| **Occupation** | | | | | | | 0.0000 |
| Housewives | 135 | 30.54 | 93 | 33.94 | 228 | 31.84 | |
| Student/Student | 176 | 39.81 | 2 | 0.73 | 178 | 24.85 | |
| Liberal function | 129 | 29.20 | 124 | 45.26 | 253 | 35.35 | |
| Employee | 2 | 0.45 | 55 | 20.07 | 57 | 7.96 | |
| **Marital status** | | | | | | | |
| Bride | 397 | 89.82 | 274 | 100 | 571 | 79.75 | 0.0000 |
| Single | 44 | 9.96 | 0 | 0 | 144 | 20.11 | |
| Divorced | 1 | 0.22 | 0 | 0 | 1 | 0.14 | |
| **Level of Education** | | | | | | | 0.0800 |
| Not in school | 189 | 42.77 | 148 | 54.01 | 337 | 47.06 | |
| Primary | 81 | 18.32 | 56 | 20.43 | 137 | 19.14 | |
| Secondary | 153 | 34.62 | 17 | 6.21 | 170 | 23.75 | |
| Superior | 19 | 4.29 | 53 | 19.34 | 72 | 10.05 | |
| **Parity** | | | | | | | |
| Primipare | 363 | 82.13 | 18 | 6.57 | 381 | 53.21 | |
| Paucipare | 75 | 16.97 | 75 | 27.27 | 150 | 20.95 | 0.0000 |
| Multipare | 4 | 0.90 | 181 | 66.06 | 185 | 25.84 | |
| **Inter-reproductive interval** | | | | | | | |
| Less than 6 months | 68 | 15.38 | 21 | 7.66 | 395 | 55.17 | |
| Greater than/equal to 6 months | 374 | 84.62 | 253 | 92.34 | 321 | 44.83 | 0.005 |

| Method of admission | | | | | | | |
|---|---|---|---|---|---|---|---|
| Coming from home | 379 | 85.74 | 254 | 92.70 | 633 | 88.41 | 0.2 |
| Evacuated | 63 | 14.26 | 20 | 7.30 | 83 | 11.59 | |
| **Number of NICs** | | | | | | | |
| 0 | 1 | 0.22 | 0 | 0 | 1 | 0.14 | 0.0000 |
| 1-2 | 66 | 14.93 | 30 | 10.95 | 96 | 13.41 | |
| 3-4 | 375 | 84.85 | 244 | 89.05 | 619 | 86.45 | |
| **Location of NHC** | | | | | | | |
| Health Centre | 237 | 53.62 | 93 | 33.94 | 330 | 46.09 | |
| Municipal Medical Centre | 54 | 12.22 | 35 | 12.77 | 89 | 12.43 | |
| CHU | 61 | 13.80 | 87 | 31.74 | 148 | 20.67 | |
| Private structures | 89 | 20.13 | 59 | 21.53 | 148 | 20.67 | |
| Not specific | 1 | 0.22 | 0 | 0 | 1 | 0.14 | |

**Table 1:** Socio-demographic characteristics.

## Characteristics of childbirth (Table 2)

### Prognosis

#### Maternal prognosis

- **Maternal morbidity:** Complications in childbirth occurred in women aged 35 and under, with slightly more in women aged 22.17 (98/442) versus 15.32% (42/274) (Table 3)

**Maternal mortality:** we recorded 4 maternal deaths in adolescent girls either a maternal lethality of 9 and a death in women aged 35 years or a lethality of 3.6

#### Fetal prognosis

- **Apgar score:** Newborn teen mothers had an Apgar score > 7/10 at 69.23% in the first minute of life and 90.95% in the fifth minute of life and those from late pregnancies (age years) 69.34% in the first minute and 87.59% in the fifth minute of life (Table 4).

## Discussion

### Frequency

Our birth rate among women of extreme ages (24%) is close to that of KAMEL BEN SALEM et al., [10] in Tunisia which reported 22.5%.

### Socio-demographic characteristics

Maternal age is a determining factor in fetal morbidity and mortality [2,11]. All authors agree that pregnancies at the extreme ages of reproductive life (20 years; ≥35 years) expose women to complications that are sometimes very serious (pre-eclampsia, eclampsia, dystocia, diabetes, postpartum hemorrhage, etc.,) [12] and sometimes unfavourable results on the outcome of pregnancy (low birth weight newborns, stillbirths, prematurity… ) [13,14]. Compared to the socio-professional category, the majority of women who gave birth under the age of 20 were students (39.82%), while those aged 35 and over were mostly women with a liberal profession, 45.26%; the observed differences were statistically significant (p=0.000).

| Mode Childbirth | < 20 years | | 35 years | | Total | | P |
|---|---|---|---|---|---|---|---|
| | workforce | % | workforce | % | Workforce | % | |
| Low Channel | 268 | 60.64 | 203 | 74.08 | 471 | 65.78 | 0.0000 |
| Caesarean section | 174 | 39.36 | 71 | 25.92 | 245 | 34.22 | |

**Table 2:** Mode of delivery.

| Maternal complication | Age group | | | | Total | | P |
|---|---|---|---|---|---|---|---|
| | < 20 years | | >= 35 years | | | | |
| | Workforce | Percentage | Workforce | Percentage | Workforce | Percentage | **0.0000** |
| Dystocia | 58 | 13.12 | 7 | 2.55 | 65 | 9.08 | |
| Eclampsia | 8 | 1.80 | 2 | 0.73 | 10 | 1.40 | |
| Uterine rupture | 5 | 1.15 | 8 | 2.92 | 13 | 1.82 | |
| Post partum hemorrhage | 16 | 3.16 | 19 | 6.93 | 35 | 4.88 | |
| Infection of Post partum | 11 | 2.48 | 6 | 2.19 | 17 | 2.37 | |

**Table 3:** Distribution of the two (2) populations according to the risk of maternal complications.

| Characteristics of newborns | Age group | | | | Total | | P |
|---|---|---|---|---|---|---|---|
| | < 20 years | | 35 years | | | | |
| | Workforce | Percentage | Workforce | Percentage | Workforce | Percentage | 0.8 |
| **Profile of the newborn** | | | | | | | 0.0000 |
| Premature | 28 | 6.20 | 14 | 5 | 42 | 57.37 | |
| Forward | 410 | 90.7 | 256 | 91.43 | 666 | 90.98 | |
| Post term | 14 | 3.10 | 10 | 3.57 | 24 | 3.27 | |
| **Weight of the newborn** | | | | | | | |
| < 2500 g | 109 | 24.12 | 49 | 17.50 | 158 | 21.58 | |
| 2500 -3999g | 327 | 72.34 | 200 | 71.43 | 527 | 71.99 | |
| 4000g | 16 | 3.54 | 31 | 11.07 | 47 | 6.43 | |
| **Perinatal mortality** | | | | | | | |
| **Stillbirth** | | | | | | | |
| Yes | 32 | 7.08 | 22 | 7.86 | 54 | 7.38 | 0.7 |
| No | 420 | 92.92 | 258 | 92.14 | 678 | 92.62 | |
| **Early neonatal mortality** | | | | | | | 0.0000 |
| Yes | 9 | 1.99 | 7 | 2.50 | 16 | 2.19 | |
| No | 443 | 98.01 | 273 | 97.50 | 716 | 97.81 | |

**Table 4:** Characteristics of newborns.

With regard to marital status, both adolescent girls and those who gave birth 35 years or older were mostly married, or 89.82% versus 100% without significant differences. This could be linked to socio-cultural reasons within our country which practices 95% Muslim religion strongly condemning the occurrence of a pregnancy outside marriage. With regard to the level of education, in both populations (<20 years; 35 years), the majority of women were out of school or 42.77% versus 54.02%; this result could be explained by the enrolment rate of the Guinean general population, which has 74% illiteracy, of which 85.3% are female [15]: this fact is linked, on the one hand, to the reluctance of parents who will be abandoned with housework and, on the other, to the fear of abandonment of traditional customs and customs.

As for parity, adolescent girls were mostly primitive (82.13%) and older parturients were mostly multipares (66.66%) with statistically significant differences. This result is comparable to that of Kamel Ben Salem et al., [10] in Tunisia reporting 99.5% primiparity among adolescent girls and the almost exclusivity of multiparity in the group of women 35 years and older. With regard to the inter-reproductive interval, it was short in 15.38% of adolescent girls compared with 7.66% (< 6 months) of elderly parturients; this result is related to that of Kamel Ben Salem et al., [10] (inter-reproductive interval runs in 7.9% of women aged 19 years or younger and 17.9% of women aged 35 years or older. In contrast, Zhu BP et al., [16] in the USA reported in its series that the reproductive interval was short in 83.60% of women aged 19 and under and 56.9% of those aged 35 and over. Prenatal follow-up is an effective preventive activity to improve the outcome of pregnancy [17], especially at risk.

Our work has shown that prenatal follow-up was followed, as recommended by the WHO in the context of refocused NHC (at least 4 NHC) per pregnancy in both populations is 84.84% versus 89.05% with no significant difference (p=0.2). With regard to the location of prenatal follow-up, the majority of women in the two (2) populations had made prenatal visits to a health center or 53.62% versus 33.94% with a significant difference p=0.0000. This could be explained by the fact that the health center is a basic (primary level) peripheral health structure closer to the populations.

## Characteristics of childbirth

With regard to the mode of delivery, the low pathway was the most common mode in the two (2) populations: 63.34% versus 74.08%. However, the rate of C-section was higher among adolescent girls compared to older parturient at 39.36% versus 25.92%. These figures are consistent with those reported in the literature. Several authors have found that although caesarean section is not an age-dependent risk alone, it increases its rate [18] especially when advanced age is associated with primiparity [19]. Studies of women 35 years of age and older have reported that the risk of C-section increases when the woman is primitive and 35 years of age, or when she is multiple and 40 years of age and older [20].

## Prognosis

**Maternal prognosis:** Analysis of this endpoint shows that the two (2) populations are all roughly similar risk groups for maternal morbidity and mortality. This in table 3 shows that the risk of certain maternal complications occurring is increased in one group compared to the other, for dystocia and eclampsia in adolescent girls and uterine rupture and postpartum hemorrhage in women 35 years of age or older. The higher risk of uterine rupture and postpartum hemorrhage in older parturients could be explained by the multiparity (flaccid uterus) that would be seen in 84% of this female layer in Africa [3].

**Pronostic fœtal:** l' accouchement était à terme dans 91.72% des cas chez les femmes d'âge extrême avec 90.7% chez les adolescentes versus 91.43% chez les parturientes âgées ; la prématurité n'avait été observée que chez 5.78% des nouveaux nés des femmes aux âges extrêmes sans différence significative entre les deux (2) groupes p=0.8. Finding shared by Kamel Ben Salem et al., [10] in Tunisia (5.44%). Low birth weight and macrosomy accounted for 10.10% and 6.47% of mothers of extreme ages, respectively.

These rates were significantly different in the two (2) groups: low birth weight was higher among adolescent girls (13.05% versus 5.36%); the opposite is true for fetal macrosomia, which remains significantly higher in older women with 11.07% versus 3.54%. This high risk of low birth weight in young women may be due to poor nutrition, prenatal follow-up and primiparity [21]. The overall stillbirth rate was 46.4 for women of extreme ages with 48.6 for adolescent girls and 42.8 for women aged 35 and over. In addition to the effect of age [13], some authors [22] involved the short inter-reproductive interval in the occurrence of stillbirth. Our overall stillbirth rate (74.7) is significantly higher than the overall birth rate reported in the literature [3]. According to the literature, the etiology of stillbirth remains unclear in 12 - 50% of cases [23]. However, poor socio-economic status, opportunities for nutritional anaemia, inadequate prenatal follow-up, parasitic and bacterial infestations are common in developing countries and may be co-factors in stillbirth [24]. The overall early neonatal mortality rate was 22, for women of extreme ages.

Our figures are much higher than those observed globally in some developed countries such as the USA (3%) [25], although our rate is to be considered with some reservation, given that the delivery of babies seldom after 24 hours in our maternity wards, there is no room, and newborns at risk are transferred to neonatal care. For example, our overall perinatal mortality rate was 96.64 in women of extreme ages. In addition to age, the literature speaks of other maternal characteristics (short inter-reproductive interval and poorly monitored pregnancies) that are involved in the significant increase in perinatal mortality rate.

Women of extreme ages (adolescents and women aged 35 and over) have an absolutely identical rate of stillbirth; other risks are comparable in the two (2) age groups, some are significantly high in one group compared to the other, such as low birth weight in adolescent girls and macrosomy in older parturient. Common prenatal monitoring units could be considered for these two (2) population categories with a particular emphasis on specific aspects of each group.

## References

1. Tebeu PM, Kouma L, Obama Am (2002) What would be the Age of Early Parity among Adolescent Girls in Cameroon; 5 years of experience (CHU Yaoundé). Med ARN 49: 417-424.

2. Montan S (2007) Increased risk in the elderly parturient. Curr Opin Obstet Gynecol 19: 110-112.

3. Tebeu PM, Major AL, Ludique F, Ludicke F, Obama MT, et al. (2004) Fate of childbirth at the extreme ages of reproductive life. Rev med liege 59: 455-459.

4. Unfer V, Garnica JP, Di Benedetto MR, Costabile L, Gallo G, et al. (1995) Pregnancy in adolescents. A case-control study. Clin Exp Obstet Gynecol 22: 161-163.

5. Abzug MJ (1997) Maternal factors affecting the integrity of the late gestation placental barrier to murine enterovirus infection. J Infect Dis 176: 41-49.

6. Genest L, Decroix H, Rotten D, Simmat-Durand L (2014) [Early motherhood: Sociodemographic profiles of 220 teenage mothers in Seine-Saint-Denis]. J Gynecol Obstet Biol Reprod (Paris) 43: 351-360.

7. Vincent-Rohfritsch A, Le Ray C, Anselem O, Cabrol D, Goffinet F (2012) [Pregnancy in women aged 43 years or older: Maternal and perinatal risks]. J Gynecol Obstet Biol Reprod (Paris) 41: 468-475.

8. Salni M, Barakat A (2014) Late pregnancies: About 200 cases, reference center of neonatalogy and neonatal resuscitation, children's hospital, Rabat Morocco.

9. Luhete PK, Mukuku O, Tambwe AM, Kayamba PKM (2017) [Study of maternal and perinatal prognosis for vaginal delivery in adolescent girls in Lubumbashi, Democratic Republic of the Congo]. Pan Afr Med J 26: 182.

10. Salem KB, S EL Mhamdi S, Amor IB, Asriha BS, Letaief M, et al. (2010) Epidemiological and chronological profile of the parturientes in the extreme ages in the Monastir region between 1994 and 2003. La Tunisie médicale 88: 563-568.

11. Tabcharoen C, Pinjaroen S, Suwanrath C, Krisanapan O (2009) Pregnancy outcome after age 40 and risk of low birth weight. J Obstet Gynaecol 29: 378-383.

12. Ozalp S, Tanir HM, Sener T, Yazan S, Keskin AE (2003) Health risks for early (< or =19) and late (> or =35) childbearing. Arch Gynecol Obstet 268:172-174.

13. Huang L, Sank R, Birkett N, Fergusson D, Van Valraven C (2008) Maternal age and risk of stillbirth: A systematic review. CMAJ 178: 165-172.

14. Kumar A, Singh T, Basu S, Pandey S, Bhargava V (2007) Outcome of teenage pregnancy. Indian J Pediatr 74: 927-931.

15. Direction Nationale de la Statistique (Guinea) (2013) Enquête Démographique et Santé a Nombreux Indicators (EDS-MICS, 2012). Institut National de la Statistique Conakry, Measure, DHS, ICF International Calverton, Maryland, USA.

16. Zhu BP, Haines KM, Le T, McGrath-Miller K, Boulton ML (2001) Effect of the interval between pregnancies on perinatal outcomes among white and black women. Am J Obstet Gynecol 185: 1403-1410.

17. Ickovics JR, Kershaw TS, Westdahl C, Magriples U, Massey Z, et al. (2007) Group prenatal care and perinatal outcomes: A randomized controlled trial. Obstet Gynecol 110: 330-339.

18. Dos Santos GHN, Martins MG, Sousa MS, Batalha SJC (2009) [Impact of maternal age on perinatal outcomes and mode of delivery]. Rev Bras Ginecol Obstet 31: 326-334.

19. Naqvi MM, Naseem A (2004) Obstetrical risks in the older primigravida. J Coll Physicians Surg Pak 14: 278-281.

20. Heffner LJ, Elkin E, Fretts RC (2003) Impact of labor induction, gestational age, and maternal age on cesarean delivery rates. Obstet Gynecol 102: 287-293.

21. Njah M, Helali J, Tabka A, Souissi M, Marzouki M (1995) [Determinant factors in the choice of site of delivery and the role of peripheral maternity units in a semi-urban environment in Tunisia]. Rev Fr Gynecol Obstet 90: 148.

22. Smith GC, Pell JP, Dobbie R (2003) Interpregnancy interval and risk of preterm birth and neonatal death: Retrospective cohort study. BMJ 327: 313.

23. Pitkin RM (1987) Fetal death: Diagnosis and management. Am J obstet Gynecol 157: 583-589.

24. Vintzileos AM, Ananth CV, Smulian JC, Scorza WE, Knuppel RA (2002) The impact of prenatal care on neonatal deaths in the presence and absence of antenatal high-risk conditions. Am J Obstet Gynecol 186: 1011-1016.

25. UNICEF (2018) World is failing newborn babies, says UNICEF. UNICEF, New York, USA.

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