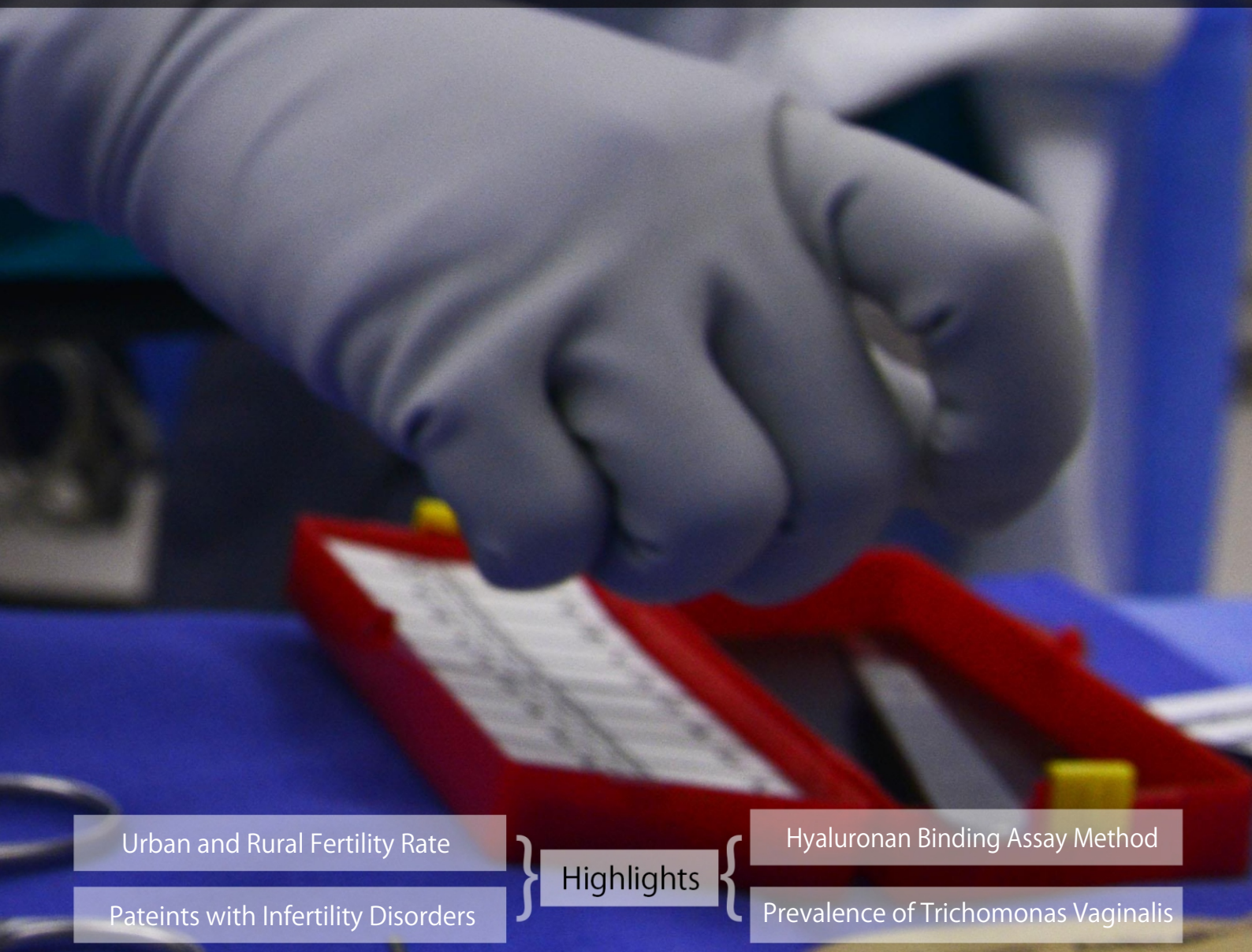
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Gynecology & Obstetrics



Urban and Rural Fertility Rate

Pateints with Infertility Disorders

Highlights

Hyaluronan Binding Assay Method

Prevalence of Trichomonas Vaginalis

Discovering Thoughts, Inventing Future

VOLUME 18 ISSUE 2 VERSION 1.0

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Comparison between the Fertility Rate among Selected Group of Urban and Rural Sudanese Males Applying Hyaluronan Binding Assay Method

By Dr. Mohamed A. Gafoor A. Gadir, Mohammed Omer Mohammed & Mosab Nouraldein Mohammed
Elsheikh Abdallah Elbadri University

Abstract- *Background:* Sperm hyaluronan binding may be an indicator of which sperm are most likely to produce a viable pregnancy. For example, mature, hyaluronan-binding sperm are essentially free of cytoplasmic inclusions. This is of great value since cytoplasmic inclusions are extremely difficult to see when selecting sperm to inject into eggs in an in vitro fertilization cycle.

Rationale: The data concerning fertility rate of rural and urban Sudanese males' populations is extremely rare.

Objectives: To know the fertility rate among rural in comparison to urban Sudanese males.

Method: Men who are preparing to do in vitro fertilization with ICSI will be asked to collect a semen specimen in the same manner that they would for a conventional semen analysis. The semen is mixed with some media and placed on a special slide that has been coated with hyaluronan. Mature sperm will bind the hyaluronan (bound).

Keywords: *fertility rate, urban, rural, hyaluronan binding assay.*

GJMR-E Classification: *NLMC Code: WP 565*

COMPARISONBETWEENTHEFERTILITYRATEAMONGSELECTEDGROUPOFURBANANDRURALSUDANESEMALESAPPLYINGHYALURONANBINDINGASSAYMETHOD

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Dr. Mohamed A. Gafoor A. Gadir [α], Mohammed Omer Mohammed [σ] & Mosab Nouraldein Mohammed [ρ]

Abstract- ***Background:*** Sperm hyaluronan binding may be an indicator of which sperm are most likely to produce a viable pregnancy. For example, mature, hyaluronan-binding sperm are essentially free of cytoplasmic inclusions. This is of great value since cytoplasmic inclusions are extremely difficult to see when selecting sperm to inject into eggs in an in vitro fertilization cycle.

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Result: Average of HBA of urban: 76.4% (normal) Average of HBA rural: 64.25% (lower than normal).

Discussion: Fertility rate among urban males was higher than that of rural males which is differ from previous studies mentioned above, that may be attributed to environmental, occupational, nutritional and social factors.

Conclusion: We conclude that the fertility rate among rural participants was lower than that of urban participants.

Recommendations: Further studies must be done with large sample size and more fertility assessment methods

Acknowledgement: To all participants in the study for their collaboration and cooperation with the research team.

Keywords: fertility rate, urban, rural, hyaluronan binding assay.

I. Introduction

The most important part of the management of male infertility is a correct diagnosis. The semen analysis is widely performed as a major test of male fertility potential, by assessing sperm count, motility and morphology of the spermatozoa. It is clear that these parameters are not sufficient alone to interpret the fertility status of an ejaculate, unless significantly abnormal. Sperm function may not be predicted by semen analysis, as the fertilization process involves a large number of biochemical events not measured by these parameters. Thus, semen analysis is limited in its inability to assess the fertilizing potential of the sample. Nearly one third of male factor infertility etiologies remain unexplained and are considered idiopathic. Additional tests need to be used to indicate the functional activity of spermatozoa. The sperm penetration assay (SPA) is one such test that provides additional information for sperm fertilizing ability, using zona free hamster oocytes. Unfortunately, the SPA is costly, technically challenging, time consuming and is not readily performed in many infertility clinics. We chose to examine a less costly, technically easier alternative for assessing sperm function that could serve as a useful screening tool to aid in the decision making process to determine which appropriate reproductive techniques should be used. [(1)]

The HBA Assay is a diagnostic tool with dual Hyaluronan coated chambers for sperm sample evaluation.

The Sperm-Hyaluronan Binding Assay is designed to provide a qualitative assessment of sperm quality, maturity, and fertilizing potential.

It allows you to distinguish between mature sperm that express Hyaluronan receptors and those that do not. Assessing the proportion of sperm with Hyaluronan receptors can then be used to decide which treatment is best for your patient. [(2)]

Hyaluronan is a type of sugar known as a high molecular weight glycosaminoglycan. Hyaluronan is found in many parts of the body. Most importantly, hyaluronan is a key component of the group of cells that surround the egg (the cumulus oophorous). During the final stages of sperm maturation, the sperm develop the ability to bind (attach) to hyaluronan. Research has shown that hyaluronan binding is an important indicator of sperm health and maturity. It appears that the attachment of sperm to the hyaluronan surrounding the

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egg serves as a natural selection mechanism for mature sperm during normal conception.

Markers of sperm health and maturity

Beyond the parameters that we look at in a normal semen analysis, there are other markers of sperm health and maturity.

a) Cytoplasmic Inclusions

During the final stages of sperm maturation, a normal sperm must get rid of excess cytoplasm. Defects in the normal development of sperm may result in excess cytoplasm being retained near the sperm head. This is known as cytoplasmic retention or inclusions. These are visible with a high powered microscope.

b) Sperm Creatine Phosphokinase (CK)

Elevated levels have been shown in a number of studies to be associated with defective sperm function and lower pregnancy rates.

c) Hsp A2 Chaperone Protein

This protein is found in higher levels in normal sperm. Sperm with low levels are more likely to have chromosome abnormalities and DNA fragmentation.

d) Sperm Hyaluronan Binding

Sperm hyaluronan binding may be an indicator of which sperm are most likely to produce a viable pregnancy. For example, mature, hyaluronan-binding sperm are essentially free of cytoplasmic inclusions. This is of great value since cytoplasmic inclusions are extremely difficult to see when selecting sperm to inject into eggs in an in vitro fertilization cycle.

e) The Hyaluronan Binding Assay Work

Men who are preparing to do in vitro fertilization with ICSI will be asked to collect a semen specimen in the same manner that they would for a conventional semen analysis. The semen is mixed with some media and placed on a special slide that has been coated with hyaluronan. Mature sperm will bind the hyaluronan (bound). These sperm will appear to have their heads stuck but with tails that show vigorous tail motion. Immature sperm will move freely (unbound).

We then calculate the percentage of bound sperm. This is the HBA score. A normal HBA score is greater than 70%. An abnormal HBA score is less than 70%.

For all men with an abnormal HBA score, when they have ICSI performed in the lab, the embryologists will use media containing hyaluronan to select healthy sperm for injection. [3]

Approximately 10 to 15% of couples are impacted by infertility. Recently, the pivotal role that lifestyle factors play in the development of infertility has generated a considerable amount of interest. Lifestyle factors are the modifiable habits and ways of life that can greatly influence overall health and well-being, including fertility. Many lifestyle factors such as the age at which to start a family, nutrition, weight, exercise, psychological stress, environmental and occupational exposures, and others can have substantial effects on fertility; lifestyle factors such as cigarette smoking, illicit drug use, and alcohol and caffeine consumption can negatively influence fertility. It has been estimated that 7.4% of women and their husbands in the United States are infertile and that the number of infertile people in the world may be as high as 15%, particularly in industrialized nations. [4]

II. Literature Review

Study done by Kulu H in Finland showed that; fertility levels are the highest in small towns and rural areas and the lowest in the capital cities. [5]

Study done by Li S and Wang W in China showed that, the proportion of urban population with similar rates of fertility with rural areas would have produced 28.77%, but census figures indicate urbanization to be 26.23%. The imbalance in urban and rural fertility rates has increased urbanization by 2.54%.[6]

III. Rationale

The data concerning fertility rate of rural and urban Sudanese males' populations is extremely rare.

IV. Objectives

To know the fertility rate among rural in comparison to urban Sudanese males

V. Material and Methods

1. *Study Design:* Descriptive Study.
2. *Study Period:* January to December 2017.
3. *Sample Size:* 40, equally divided into 20 urban Sudanese males and 20 rural Sudanese males.
4. *Study Population:* Sudanese adults' males resident in towns or villages.

VI. Selection Criteria

a) Inclusion Criteria

- Sudanese
- Adult
- Male
- Married from one year or more
- Live permanently in village or town.

b) Exclusion Criteria

- Not Sudanese
- Child
- Female
- Single

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VII. Ethical Consideration

All participants were informed about the objectives of the study and their consents were obtained before sampling.

VIII. Method

a) *Specimen:* Seminal Fluid.

b) *Technique*

Commercial HBA kits were purchased from Biocoat, and the HBA test was performed following the manufacturer's instructions. Briefly, 10 μl of semen (well mixed) was added to the centre of the HBA chamber and the Cell-Vu grid cover slip was put on without entrapping air bubbles. The cover slip provided a grid of 100 squares (each 0.1 mm × 0.1 mm) within a viewing circle. After incubation of the slide for 15 min, the unbound motile sperm and the bound motile sperm were counted in the same grid squares. For the HBA test, 400 motile sperm were counted. The percentage of hyaluronan-binding sperm was calculated using the bound motile sperm divided by the sum of bound and unbound motile sperm counted in the same squares and then multiplied by 100.

IX. Results

Average of HBA of urban: 76.4%
Average of HBA rural: 64.25%

X. Discussion

Fertility rate among urban males was higher than that of rural males which is differ from previous studies mentioned above, that may be attributed to environmental, occupational, nutritional and social factors.

XI. Conclusion

We conclude that the fertility rate among rural participants was lower than that of urban participants.

XII. Recommendations

Further studies must be done with large sample size and more fertility assessment methods.

Acknowledgement

To all participants in the study for their collaboration and cooperation with the research team.

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Occupation and Male Infertility among Selected Group of Sudanese Patients with Infertility Disorders

By Mohammed Omer Mohammed Hussein, Mohamed A. Gafoor A. Gadir, Mosab Nouraldein Mohammed Hamad & Maha Alameen

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Abstract- *Background:* Occupation affect directly or indirectly the reproductive system of male and that may lead to serious complications, which may lead finally to male infertility.

Justification: There is no published data about the association between occupation and fertility among Sudanese males.

Objectives: To know which type of the occupations is associated with high infertility rate than the other jobs among the study group

Method: Descriptive, cross sectional study, 157 participants involved in the study from different occupational environments.

Result: Workers were the most affected group (29.2%) followed by shopkeepers (10.8%), drivers (10.2%), employees (8.2%), Engineers (7.6), Security officers (5.7%), teachers (3.2%), farmers (3.2%), medical (1.9%), butchers (1.2%), others (18.8%).

Keywords: *occupation, male infertility, sudanese.*

GJMR-E Classification: *NLMC Code: WJ 709*



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Discussion: Occupation settings, overheated environment and work stress affect directly or indirectly in male fertility and may lead to infertility, our study agreed with that of B Baranski in points of the effects work settings and heat.

Conclusion: Further studies should be done with large sample size

Acknowledgement: To all persons whom participated in the study.

Keywords: *occupation, male infertility, sudanese.*

I. Introduction

Infertility is "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse. [(1)]

Male infertility refers to a male's inability to cause pregnancy in a fertile female. In humans it accounts for 40–50% of infertility. It affects approximately 7% of all men. Male infertility is commonly due to deficiencies in the semen, and semen quality is used as a surrogate measure of male fecundity. [(2)]

II. Male Infertility Epidemiology

Infertility issues plague nearly 15% of couples in the world. This means that close to 48 million couples worldwide have trouble conceiving a baby despite trying to for a year or more. Of these cases nearly 30% are due to male infertility issues. There is no way to accurately pinpoint cases of male infertility across the globe, but recent studies conducted on a region and country basis by different organizations have made it possible to gain a better understanding of the disorder.

III. Incidence and Distribution

According to the CDC, infertility affects close to 12% of the population of the United States in the sexually active demographic. Since a number of infertility cases do not get reported in various other countries across the globe, the actual number of cases may be much higher.

A WHO study undertaken between 1994 and 2000 found that North Africa and West Africa had the highest rates of infertility at 4.24 - 6.35% while Central Asia and East Asia were recorded The estimated number of infertile men in the world ranges between 30,625,864 and 30,641,262. The highest concentration of male infertility was found in Europe. The WHO study also found that the African infertile belt had a high rate of sexually transmitted diseases caused by bacteria such as N. Gonnorrhoeae and C. Trachomatis. With the lowest infertility rates of 2.05 - 3.07%. [(3)]

Global infertility prevalence rates are difficult to determine, due to the presence of both male and female factors which complicate any estimate which may only address the woman and an outcome of a pregnancy diagnosis or live birth.

One in every four couples in developing countries had been found to be affected by infertility, when an evaluation of responses from women in Demographic and Health Surveys from 1990 was completed in collaboration with WHO in 2004.

The burden remains high. A WHO study, published at the end of 2012, has shown that the overall burden of infertility in women from 190 countries has remained similar in estimated levels and trends from 1990 to 2010.

A WHO evaluation of Demographic and Health Surveys (DHS) data (2004), estimated that more than 186 million ever-married women of reproductive age in

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developing countries were maintaining a "child wish", translating into one in every four couples. [4]

IV. Symptoms

The main sign of male infertility is the inability to conceive a child. There may be no other obvious signs or symptoms. In some cases, however, an underlying problem such as an inherited disorder, hormonal imbalance, dilated veins around the testicle, or a condition that blocks the passage of sperm causes signs and symptoms.

Although most men with male infertility do not notice symptoms other than inability to conceive a child, signs and symptoms associated with male infertility include:

- Problems with sexual function-for example, difficulty with ejaculation or small volumes of fluid ejaculated, reduced sexual desire or difficulty maintaining an erection (erectile dysfunction).
- Pain, swelling or a lump in the testicle area.
- Recurrent respiratory infections.
- Inability to smell.
- Abnormal breast growth (gynecomastia).
- Decreased facial or body hair or other signs of a chromosomal or hormonal abnormality.
- Having a lower than normal sperm count (fewer than 15 million sperm per milliliter of semen or a total sperm count of less than 39 million per ejaculate). [5]

V. Causes

More than 90% of male infertility cases are due to low sperm counts, poor sperm quality, or both. The remaining cases of male infertility can be caused by a range of conditions including anatomical problems, hormonal imbalances, and genetic defects.[6]

a) *Sperm Abnormalities*

i. *Sperm morphology (teratozoospermia)*

It is the shape and size of sperm, which means the head should be oval in shape, have a mid-section, and have a long, straight tail. If sperm have a double tail, no tail, or a head that is crooked, misshapen, has double heads, or too large, it is considered to be abnormal, and therefore unable to successfully penetrate an egg. Sperm morphology is routinely tested for in the male infertility semen analysis. Most men have a large percentage of abnormal sperm morphology, with only 4-15% of their sperm being considered normal. What is important is that that 4-15% has good vitality and motility. Also important is the overall volume of semen, sperm concentration, and sperm count.

Men with abnormal sperm morphology are still perfectly capable of fathering children; it just may take longer than normal to do so. This diagnosis does not mean infertility. It just means a challenge is ahead of you, and patience is going to be necessary. If natural conception does not work, you always have the option of assisted reproductive technology like in vitro fertilization and Intra Cytoplasmic Sperm Injection (ICSI).

One issue with abnormal sperm morphology is that there is no easy fix. There is no one pill, vitamin, shot, or surgery that will fix this issue. This does not mean you should not give these options a try before resorting to assisted reproductive technology, it just means that it is advisable to set a defined period for trying it. Have a semen analysis after 3 months to see if the treatment is working. The longer you try it, the older your female partner gets, and the lower her fertility gets. If you spend years on these treatments, you lower the chances of success from even the best ART treatments. Intrauterine insemination (IUI) is not recommended for patients with abnormal sperm morphology. In general, ICSI is the most recommended treatment because an embryo can be created with any sperm, regardless of the quality of the sperm being used. [7]

It has been recognised for many years that occupational exposure to lead could affect male fertility at sufficiently high doses. The discovery that dibromochloropropane (DBCP), a nematocide used particularly in sub-tropical climates, could induce azoospermia raised concerns that other chemical compounds might affect spermatogenesis. A relatively small number of substances particularly pesticides (for example, keptone4 and ethylene dibromide), organic solvents (for example, carbon disulphide) and physical agents (heat and driving) were identified as possibly influencing parameters (count, motility or morphology) measured in routine semen analyses. [8]

Heat may not be something that you think about when considering your occupation and fertility, but overheated working environments can also have an impact on male fertility. [9]

The infertility due to occupation environment's is a big problem that may affect not only the workers in that environment but it affect the whole community ,then the safety department should perform strong safety guidelines , that aid to preserve the workers fertility .

VI. Literature Review

Study done by B Baranski showed that; the certain chemicals, heat and occupational settings may affect a function of male genital system and then lead to infertility. [10]

VII. Justification

There is no published data about the association between occupation and fertility among Sudanese males.

VIII. Objectives

To know which type of the occupations is associated with high infertility rate than the other jobs among the study group.

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IX. Materials and Methods

Study Design: Descriptive, cross sectional study.

Study Period: July –October, 2016.

Study Population: Sudanese, adult males, performing different occupations and suffering from infertility disorders.

Sample Size: 157 Participants.

X. Selection Criteria

a) Inclusion Criteria

- Sudanese
- Adult
- Male
- Employed

b) Exclusion Criteria

- Not Sudanese
- Child
- Female
- Unemployed

XI. Ethical Consideration

All participants were informed about the purpose of the study and all of them were consent.

Data Collection: Data were collected through questionnaire.

XII. Result

Workers were the most affected group (29.2%) followed by shopkeepers (10.8%), drivers (10.2%), employees (8.2%), Engineers (7.6), Security officers (5.7%), teachers (3.2%), farmers (3.2%), medical (1.9%), butchers (1.2%), others (18.8%).

XIII. Discussion

Occupation settings, overheated environment and work stress affect directly or indirectly in male fertility and may lead to infertility , our study agreed with that of B Baranski in points of the effects work settings and heat .

XIV. Conclusion

Further studies should be done with large sample size

Acknowledgement

To all persons whom participated in the study.

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Polycystic Related Acne among Selected Group of Sudanese Women with Infertility Disorders

By Mohamed A. Gafoor A. Gadir, Mohammed Omer Mohammed & Mosab Nouraldein Mohammed
Elsheikh Abdallah Elbadri University

Abstract- *Background:* PCOS related acne is a sign of polycystic ovaries syndromes, which occur as a result of elevation in androgens levels.

Justification: There is no published data about the polycystic related acne among Sudanese women with infertility disorders.

Objectives: To know prevalence of polycystic related acne among selected group of Sudanese women with infertility disorder.

Method: Descriptive, cross- sectional study, 94 Sudanese women with infertility disorders were involved, based on clinical examination and observation.

Result: 36.2% of participants had polycystic related acne.

Discussion: The prevalence of acne among the study group is a good sign for polycystic ovary syndrome which is one of most common causes of female infertility.

Keywords: *polycystic ovaries, acne, sudanese.*

GJMR-E Classification: *NLMC Code: WP 570*



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Discussion: The prevalence of acne among the study group is a good sign for polycystic ovary syndrome which is one of most common causes of female infertility

Conclusion: More than one-third of the study group had polycystic ovaries related acne. Further studies must be done involving imaging and laboratory tests.

Acknowledgement: To all participants in the study for their collaboration and cooperation with the research team.

Keywords: polycystic ovaries, acne, sudanese.

I. Introduction

Polycystic ovary syndrome (PCOS) is a hormonal disorder common among women of reproductive age. Women with PCOS may have infrequent or prolonged menstrual periods or excess male hormone (androgen) levels. The ovaries may develop numerous small collections of fluid (follicles) and fail to regularly release eggs. (1)

The three main features of PCOS are:

- Irregular Periods – which means your ovaries don't regularly release eggs (ovulation)
- Excess Androgen – high levels of "male hormones" in your body, which may cause physical signs such as excess facial or body hair (see signs and symptoms below)
- Polycystic Ovaries – your ovaries become enlarged and contain many fluid-filled sacs (follicles) which surround the eggs (it's important to note that, despite the name, if you have PCOS you don't actually have cysts). (2)

In polycystic ovary syndrome, multiple cysts in each ovary can be seen with medical imaging. These cysts are small, immature ovarian follicles. Normally, ovarian follicles contain egg cells, which are released during ovulation. In polycystic ovary syndrome, abnormal hormone levels prevent follicles from growing and maturing to release egg cells. Instead, these immature follicles accumulate in the ovaries. Affected women can have 12 or more of these follicles. The number of these follicles usually decreases with age.

About half of all women with polycystic ovary syndrome are overweight or obese and are at increased risk of a fatty liver. Additionally, many women with polycystic ovary syndrome have elevated levels of insulin, which is a hormone that helps control blood sugar levels. By age 40, about 10 percent of overweight women with polycystic ovary syndrome develop abnormally high blood sugar levels (type 2 diabetes), and up to 35 percent develop prediabetes (higher-than-normal blood sugar levels that do not reach the cutoff for diabetes). Obesity and increased insulin levels (hyperinsulinemia) further increase the production of androgens in polycystic ovary syndrome.

About 20 percent of affected adults experience pauses in breathing during sleep (sleep apnea). Women with polycystic ovary syndrome are more likely to have mood disorders such as depression compared to the general population. (3)

There is no cure, but diet, exercise, and medicines can help control the symptoms. Birth control pills help women have normal periods, reduce male hormone levels, and clear acne. Treatments for infertility caused by PCOS may include medicines, surgery, and IVF. (4)

Many Sudanese ladies were suffering from polycystic ovaries syndrome which represent an important issue to the women health and to their fertility, which finally may affect the Sudanese community as whole.

A diagnosis of polycystic ovary syndrome can be made when at least two out of three of the following criteria are met:

- The ovaries are "polycystic" because:
  - 12 or more follicles are visible on one ovary or
  - The size of one or both ovaries is increased.
- There are:
  - High levels of 'male' hormones (androgens) in the blood (hyperandrogenism).
  - Symptoms suggesting an excess of androgens such as:

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- Excess hair growth
- Acne

- There is menstrual dysfunction such as:
  - Lack of periods or menses (menstrual flow).
  - Menstrual irregularity.
  - Lack of ovulation. [5]

Diagnosis: Clinical Diagnosis

- Virilizing signs.
- Acanthosis Nigricans.
- Hypertension.
- Enlarged Ovaries: May or may not be present; evaluate for an ovarian mass.

Laboratory Testing

Exclude all other disorders that can result in menstrual irregularity and hyperandrogenism, including adrenal or ovarian tumors, thyroid dysfunction, congenital adrenal hyperplasia, and hyperprolactinemia, acromegaly, and Cushing syndrome.

Baseline screening laboratory studies for women suspected of having PCOS may include the following:

- Thyroid function tests
- Serum prolactin level
- Total and free testosterone levels
- Free androgen index
- Serum hCG level
- Cosyntropin stimulation test
- Serum 17-hydroxyprogesterone (17-OHPG) level
- Urinary free cortisol (UFC) and creatinine levels
- Low-dose dexamethasone suppression test
- Serum insulin-like growth factor (IGF)–1 level

Other tests used in the evaluation of PCOS include the following:

- Androstenedione level
- FSH and LH levels
- GnRH stimulation testing
- Glucose level
- Insulin level
- Lipid panel

Imaging Tests

The following imaging studies may be used in the evaluation of PCOS:

- Ovarian ultrasonography, preferably using transvaginal approach
- Pelvic CT scan or MRI to visualize the adrenals and ovaries. [6]

Besides irregular menstrual cycles and ovulation, weight gain, and thinning hair, one of the most notable symptoms of PCOS is acne.

PCOS-related acne tends to flare in areas that are usually considered "hormonally sensitive," especially the lower third of the face. This includes your cheeks, jaw line, chin, and upper neck.[7]

II. Literature Review

In study done by Minerva Ginecol; showed that subsequent phases of acne were correlated with the clinical severity of polycystic ovaries and to the presence of Premenstrual Syndrome in 93% of the cases.

III. Justification

There is no published data about the polycystic related acne among Sudanese women with infertility disorders.

IV. Objectives

To know prevalence of polycystic related acne among selected group of Sudanese women with infertility disorder.

V. Material and Method

Study Design: Descriptive, cross -sectional study

Study Population: Sudanese infertile females attended to Banoon IVF center, Khartoum, Sudan

Study Period: May-July, 2016

Sample Size: 94 participants

Data Collection: Data was collected via questionnaire.

Method: Clinical examination, observation

VI. Ethical Consideration

All participants were informed about the purpose of the study and all of them were consent.

VII. Result

36.2% of participants had polycystic related acne.

VIII. Discussion

The prevalence of acne among the study group is a good sign for polycystic ovary syndrome which is one of most causes of female infertility

IX. Conclusion

More than one- third of the study group had polycystic ovaries related acne. Further studies must be done involving imaging and laboratory tests.

Acknowledgement

To all participants in the study for their collaboration and cooperation with the research team.

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Prevalence of Trichomonas Vaginalis Infection among Reproductive Age Women Admitted to Soba University Hospital, Sudan

By Mosab Nouraldein Mohammed Hamad
Elsheikh Abdallah Elbadri University

Abstract- *Introduction:* Trichomonas vaginalis is an anaerobic, flagellated protozoan parasite and the causative agent of Trichomoniasis. It is the most common pathogenic protozoan infection of humans in industrialized countries. Infection rates between men and women are similar with women being symptomatic, while infections in men are usually asymptomatic. Transmission usually occurs via direct, skin-to-skin contact with an infected individual, most often through vaginal intercourse. The WHO has estimated that 160 million cases of infection are acquired annually worldwide.

Justification: Trichomonas vaginalis infection may lead to serious complications, then early detection may prevent this complications.

Objectives: To know the percentage of T. vaginalis infection among the selected group.

Material and Methods: Descriptive, cross sectional study, used urine specimens to diagnose T. vaginalis infection among selected group of Sudanese women.

Result: 1.6% were infected with T. vaginalis.

Discussion: The prevalence of Trichomoniasis among the study group is the lowest one in comparison to the previous studies.

Keywords: *trichomoniasis, sudanese, reproductive age, women.*

GJMR-E Classification: *NLMC Code: WC 700*



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Result: 1.6% were infected with T. vaginalis.

Discussion: The prevalence of Trichomoniasis among the study group is the lowest one in comparison to the previous studies.

Conclusion: Many factors may lead to tat lowest result such as, type of the specimen, small sample size and Religion.

Acknowledgement: I would like to thanks all the staff of microbiology and parasitology department at soba university hospital for their professional work and kind dealing to the patients and researchers.

Keywords: trichomoniasis, sudanese, reproductive age, women.

I. Introduction

Trichomonas vaginalis is an anaerobic, flagellated protozoan parasite and the causative agent of Trichomoniasis. It is the most common pathogenic protozoan infection of humans in industrialized countries. Infection rates between men and women are similar with women being symptomatic, while infections in men are usually asymptomatic. Transmission usually occurs via direct, skin-to-skin contact with an infected individual, most often through vaginal intercourse. The WHO has estimated that 160 million cases of infection are acquired annually worldwide. The estimates for North America alone are between 5 and 8 million new infections each year, with an estimated rate of asymptomatic cases as high as 50%. Usually treatment consists of metronidazole and tinidazole. [1]

Trichomonas vaginalis resides in the female lower genital tract and the male urethra and prostate the number 1, where it replicates by binary fission the number 2. The parasite does not appear to have a cyst form, and does not survive well in the external environment. Trichomonas vaginalis is transmitted among humans, its only known host, primarily by sexual intercourse the number 3.[2]

The most common symptoms among women are:

- Vaginal discharge, which can be white, gray, yellow, or green, and usually frothy with an unpleasant smell
- Vaginal spotting or bleeding
- Genital burning or itching
- Genital redness or swelling
- Frequent urge to urinate
- Pain during urination or sexual intercourse. [3]

a) Potential Complications

Unfortunately, there are still gaps in our knowledge of the natural history of infection in both men and women. However, we know that trichomoniasis in pregnancy can be linked to certain adverse outcomes such as pre-labor rupture of membranes, preterm delivery and low birth weight.

One recent meta-analysis of different randomized clinical trials estimated that pregnant women with trichomoniasis are 1.4 times more likely to experience a preterm delivery in comparison with women without the infection. Furthermore, those neonates sometimes presented with respiratory diseases and vaginitis.

An increased potential of acquiring co-infections with different pathogens (predominantly viruses) is also observed in those with Trichomonas vaginalis. For example, untreated or undetected infections increase the risk of both acquisition and transmission of human immunodeficiency virus (HIV), especially in regions where HIV is endemic.

Data has also shown that there is facilitated transmission of cytomegalovirus (CMV) from pregnant women to their fetuses in those with trichomoniasis.

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Interestingly, some research groups speculate that Trichomonas may be capable of harboring and carrying other infectious agents from the lower to the upper genital. [4]

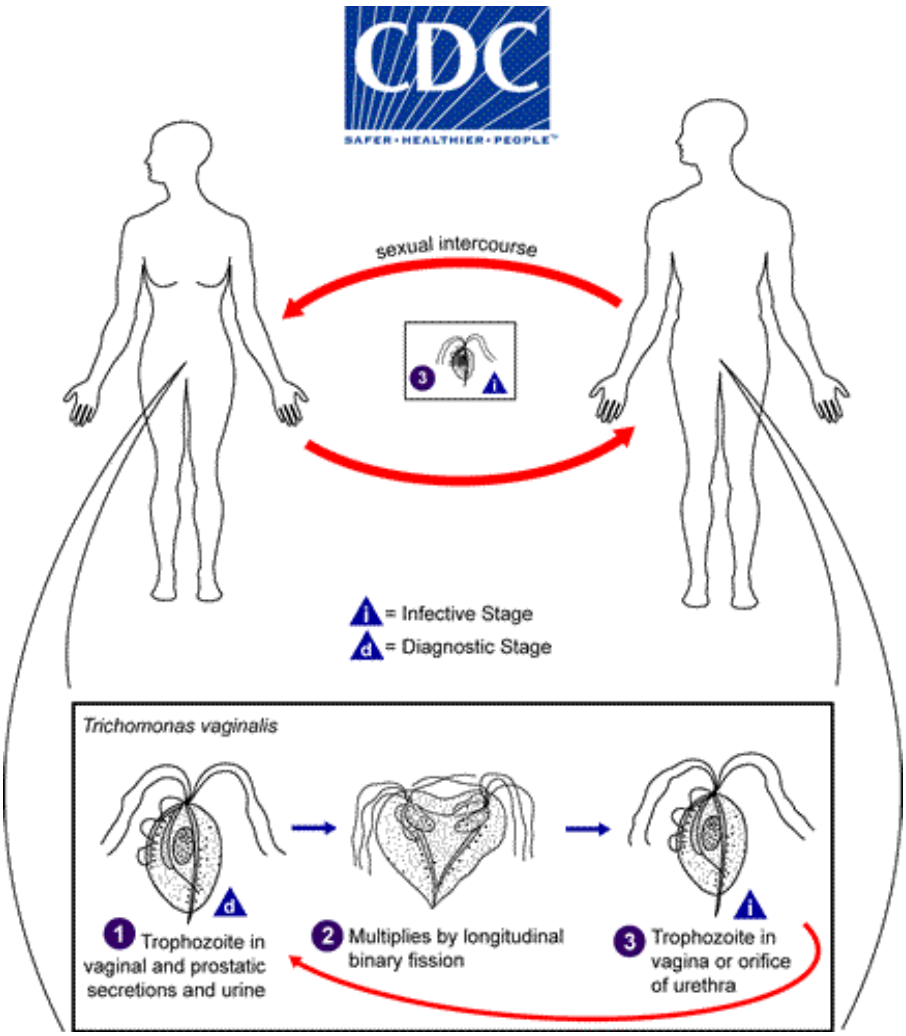


Figure 1: Life Cycle

b) Microscopical Diagnosis

The diagnosis of trichomoniasis has traditionally depended on the microscopic observation of motile protozoa from vaginal or cervical samples, urethral or prostatic secretions and urine. This technique was first described in 1836 by Donne. T vaginalis can be differentiated on the basis of its characteristic jerky movements. On occasion, flagella movement can also be noted. The sensitivity of this test varies from 38% to 82% and is dependent on the inoculum size because fewer than 104 organisms/mL will not be seen. As well, the need for the specimen to remain moist and the experience of the observer are important variables. The size of the trichomanad is approximately the same as that of a lymphocyte (10 μm to 20 μm) or a small neutrophil; when not motile, a trichomanad can be difficult to differentiate from the nucleus of a vaginal epithelial cell. Motility is very dependent on the temperature of the specimen. At room temperature in phosphate-buffered saline, the organism will remain alive for more than 6 h; however, the motility of the organisms becomes significantly attenuated. This wet mount examination is clearly the most cost-effective diagnostic test, but the lack of sensitivity contributes to the underdiagnoses of the disease. Because viable organisms are required, delay in transport and evaporation of moisture from the specimen reduces motility and, consequently, diagnostic sensitivity. [5]

II. Literature Review

Study done by Madeline Sutton et al among reproductive age women in United States showed that; the prevalence of T. vaginalis was 3.1%. [6]

In a cross sectional study performed by FabianeAguair dos AnjosGatti et al at a university hospital in southern Brazil showed that; the overall prevalence of Trichomonas vaginalis (T. vaginalis) was 4.1%. [7]

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In study done by PurnimaMadhivanan et al among young reproductive age women in India showed that; 8.5% of participants had T. vaginalis infection. [8]

III. Justification

Trichomonas vaginalis infection may lead to serious complications, then early detection may prevent this complications.

IV. Objectives

To know the percentage of T. vaginalis infection among the selected group.

V. Material and Methods

Study Design: Descriptive, cross sectional study.

Study Area: Khartoum state, soba university hospital.

Study Period: June –September 2016.

Study Population: Reproductive age Women admitted to soba university hospital.

VI. Section Criteria

a) *Inclusion Criteria*

Reproductive age women, resident in Khartoum and admitted to Soba university hospital.

b) *Exclusion Criteria*

Child or aged women, not resident in Khartoum or out patient.

c) *Sample Size*

64 women were participated in the study.

VII. Methods

Specimen: Urine Sample

Technique: Microscopy Examination of urine deposit by 40X objective lens.

VIII. Result

1.6% were infected with T. vaginalis.

IX. Discussion

The prevalence of Trichomoniasis among the study group is the lowest one in comparison to the previous studies.

X. Conclusion

Many factors may lead to tat lowest result such as, type of the specimen, small sample size and Religion.

Acknowledgement

I would like to thanks all the staff of microbiology and parasitology department at soba university hospital for their professional work and kind dealing to the patients and researchers.

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The Average of HBA among Selected Group of Sudanese Pateints with Fertility Disorders

By Mohammed Omer Mohammed, Mohamed A. Gafoor A. Gadir,
Mosab Nouraldein Mohammed & Maha Alameen
Elsheikh Abdallah Elbadri University

Abstract- *Background:* Sperm hyaluronan binding may be an indicator of which sperm are most likely to produce a viable pregnancy. For example, mature, hyaluronan-binding sperm are essentially free of cytoplasmic inclusions. This is of great value since cytoplasmic inclusions are extremely difficult to see when selecting sperm to inject into eggs in an in vitro fertilization cycle.

Rationale: There is no known data about the average of HBA among Sudanese patients with infertility problems.

Objectives: To know the average of HBA among selected group of Sudanese patients with fertility disorders.

Method: Men who are preparing to do in vitro fertilization with ICSI will be asked to collect a semen specimen in the same manner that they would for a conventional semen analysis. The semen is mixed with some media and placed on a special slide that has been coated with hyaluronan. Mature sperm will bind the hyaluronan (bound).

Keywords: *fertility rate, urban, rural, hyaluronan binding assay.*

GJMR-E Classification: *NLMC Code: WP 570, WP 565, WJ 709*



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Method: Men who are preparing to do in vitro fertilization with ICSI will be asked to collect a semen specimen in the same manner that they would for a conventional semen analysis. The semen is mixed with some media and placed on a special slide that has been coated with hyaluronan. Mature sperm will bind the hyaluronan (bound). These sperm will appear to have their heads stuck but with tails that show vigorous tail motion. Immature sperm will move freely unbound.

Result: Average of HBA was 74.82%

Discussion: The average of HBA among the participants was higher than normal and that means the reproduction disorder may probably occur in their females partners.

Conclusion: We conclude that the average of HBA among the participants was normal.

Recommendations: Further studies must be done with large sample size and the females partners should be diagnosed for infertility disorders.

Acknowledgement: To all participants in the study for their collaboration and cooperation with the research team.

Keywords: fertility rate, urban, rural, hyaluronan binding assay.

I. Introduction

The most important part of the management of male infertility is a correct diagnosis. The semen analysis is widely performed as a major test of male fertility potential, by assessing sperm count, motility and morphology of the spermatozoa. It is clear that these parameters are not sufficient alone to interpret the fertility status of an ejaculate, unless significantly abnormal. Sperm function may not be predicted by semen analysis, as the fertilization process involves a large number of biochemical events not measured by these parameters. Thus, semen analysis is limited in its inability to assess the fertilizing potential of the sample. Nearly one third of male factor infertility etiologies remain unexplained and are considered idiopathic. Additional tests need to be used to indicate the functional activity of spermatozoa. The sperm penetration assay (SPA) is one such test that provides additional information for sperm fertilizing ability, using zona free hamster oocytes. Unfortunately, the SPA is costly, technically challenging, time consuming and is not readily performed in many infertility clinics. We chose to examine a less costly, technically easier alternative for assessing sperm function that could serve as a useful screening tool to aid in the decision making process to determine which appropriate reproductive techniques should be used. [(1)]

The HBA Assay is a diagnostic tool with dual Hyaluronan coated chambers for sperm sample evaluation.

The Sperm-Hyaluronan Binding Assay is designed to provide a qualitative assessment of sperm quality, maturity, and fertilizing potential.

It allows you to distinguish between mature sperm that express Hyaluronan receptors and those that do not. Assessing the proportion of sperm with Hyaluronan receptors can then be used to decide which treatment is best for your patient. [(2)]

Hyaluronan is a type of sugar known as a high molecular weight glycosaminoglycan. Hyaluronan is found in many parts of the body. Most importantly, hyaluronan is a key component of the group of cells that surround the egg (the cumulus oophorous). During the final stages of sperm maturation, the sperm develop the ability to bind (attach) to hyaluronan. Research has shown that hyaluronan binding is an important indicator of sperm health and maturity. It appears that the attachment of sperm to the hyaluronan surrounding the egg serves as a natural selection mechanism for mature sperm during normal conception.

a) Markers of sperm health and maturity

Beyond the parameters that we look at in a normal semen analysis, there are other markers of sperm health and maturity.

i. *Cytoplasmic Inclusions*

During the final stages of sperm maturation, a normal sperm must get rid of excess cytoplasm. Defects in the normal development of sperm may result in

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excess cytoplasm being retained near the sperm head. This is known as cytoplasmic retention or inclusions. These are visible with a high powered microscope.

ii. *Sperm Creatine Phosphokinase (CK)*

Elevated levels have been shown in a number of studies to be associated with defective sperm function and lower pregnancy rates.

iii. *Hsp A2 Chaperone Protein*

This protein is found in higher levels in normal sperm. Sperm with low levels are more likely to have chromosome abnormalities and DNA fragmentation.

iv. *Sperm Hyaluronan Binding*

Sperm hyaluronan binding may be an indicator of which sperm are most likely to produce a viable pregnancy. For example, mature, hyaluronan-binding sperm are essentially free of cytoplasmic inclusions. This is of great value since cytoplasmic inclusions are extremely difficult to see when selecting sperm to inject into eggs in an in vitro fertilization cycle.

v. *The Hyaluronan Binding Assay work*

Men who are preparing to do in vitro fertilization with ICSI will be asked to collect a semen specimen in the same manner that they would for a conventional semen analysis. The semen is mixed with some media and placed on a special slide that has been coated with hyaluronan. Mature sperm will bind the hyaluronan (bound). These sperm will appear to have their heads stuck but with tails that show vigorous tail motion. Immature sperm will move freely (unbound).

We then calculate the percentage of bound sperm. This is the HBA score. A normal HBA score is greater than 70%. An abnormal HBA score is less than 70%.

For all men with an abnormal HBA score, when they have ICSI performed in the lab, the embryologists will use media containing hyaluronan to select healthy sperm for injection. [3]

Approximately 10 to 15% of couples are impacted by infertility. Recently, the pivotal role that lifestyle factors play in the development of infertility has generated a considerable amount of interest. Lifestyle factors are the modifiable habits and ways of life that can greatly influence overall health and well-being, including fertility. Many lifestyle factors such as the age at which to start a family, nutrition, weight, exercise, psychological stress, environmental and occupational exposures, and others can have substantial effects on fertility; lifestyle factors such as cigarette smoking, illicit drug use, and alcohol and caffeine consumption can negatively influence fertility. It has been estimated that 7.4% of women and their husbands in the United States are infertile and that the number of infertile people in the world may be as high as 15%, particularly in industrialized nations. [4]

It is estimated that one in 20 men has some kind of fertility problem with low numbers of sperm in his ejaculate. However, only about one in every 100 men has no sperm in his ejaculate.[5]

Despite medicine's limited ability to treat male infertility, many successful treatment options are available for its many causes. [6]

II. Literature Review

There is no previous studies about the average of HBA among Sudanese patients with infertility disorders published.

III. Rationale

There is no known data about the average of HBA among Sudanese patients with infertility problems.

IV. Objectives

To know the average of HBA among selected group of Sudanese patients with fertility disorders

V. Material and Methods

Study Design: Descriptive study

Study Period: January to December 2017

Sample Size: 100 Sudanese males with infertility problems

Study Population: Sudanese adults' males suffering from fertility disorders

VI. Selection Criteria

a) *Inclusion Criteria*

- Sudanese
- Adult
- Male
- Married from one year or more

b) *Exclusion Criteria*

- Not Sudanese
- Child
- Female
- Single

VII. Ethical Consideration

All participants were informed about the objectives of the study and their consents were obtained before sampling.

VIII. Method

a) *Specimen:* Seminal Fluid

b) *Technique*

Commercial HBA kits were purchased from Biocoat, and the HBA test was performed following the manufacturer's instructions. Briefly, 10 µl of semen (well mixed) was added to the centre of the HBA chamber and the Cell-Vu grid cover slip was put on without entrapping air bubbles. The cover slip provided a grid of

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100 squares (each 0.1 mm × 0.1 mm) within a viewing circle. After incubation of the slide for 15 min, the unbound motile sperm and the bound motile sperm were counted in the same grid squares. For the HBA test, 400 motile sperm were counted. The percentage of hyaluronan-binding sperm was calculated using the bound motile sperm divided by the sum of bound and unbound motile sperm counted in the same squares and then multiplied by 100.

IX. Result

Average of HBA was 74.82%

X. Discussion

The average of HBA among the participants was higher than normal and that means the reproduction disorder may probably occur in their females partners.

XI. Conclusion

We conclude that the average of HBA among the participants was normal

XII. Recommendations

Further studies must be done with large sample size and the females partners should be diagnosed for infertility disorders

Acknowledgement

To all participants in the study for their collaboration and cooperation with the research team.

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The Prevalence of Breast Cancer among Selected Group of Sudanese Women with Infertility Disorders

By Dr. Mohamed A. Gafoor A. Gadir, Mohammed Omer Mohammed & Mosab Nouraldein Mohammed
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Abstract- *Background:* Breast cancer is the one of the most common oncological problems affecting many Sudanese women and some therapeutic methods of that type of cancer may lead to temporary or permanent infertility.

Justification: There is no published data about the prevalence of breast cancer among infertile Sudanese women.

Objectives: To know the prevalence of breast cancer among selected group of infertile Sudanese women attended to Banoon IVF center, Khartoum, Sudan, 2016.

Method: Descriptive, cross sectional study, 100 infertile Sudanese women were involved in the study, from January to December 2016.

Result: The prevalence of breast cancer among the study group was: 6%.

Discussion: Some treatments for breast cancer can cause temporary infertility and other treatments cause permanent and irreversible menopause, which means you are permanently infertile.

Keywords: *breast cancer, infertility, Sudanese women.*

GJMR-E Classification: *NLMC Code: WP 570*



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The Prevalence of Breast Cancer among Selected Group of Sudanese Women with Infertility Disorders

Dr. Mohamed A. Gafoor A. Gadir [α], Mohammed Omer Mohammed [σ] & Mosab Nouraldein Mohammed [ρ]

Abstract- ***Background:*** Breast cancer is the one of the most common oncological problems affecting many Sudanese women and some therapeutic methods of that type of cancer may lead to temporary or permanent infertility.

Justification: There is no published data about the prevalence of breast cancer among infertile Sudanese women.

Objectives: To know the prevalence of breast cancer among selected group of infertile Sudanese women attended to Banoon IVF center, Khartoum, Sudan, 2016.

Method: Descriptive, cross sectional study, 100 infertile Sudanese women were involved in the study, from January to December 2016.

Result: The prevalence of breast cancer among the study group was: 6%.

Discussion: Some treatments for breast cancer can cause temporary infertility and other treatments cause permanent and irreversible menopause, which means you are permanently infertile. Breast cancer patients treated with chemotherapy run the risk of developing premature ovarian failure or very early menopause then the prevalence of infertility among the study group was high.

Conclusion: Further studies must be done involving women from many nationalities and with large sample size.

Acknowledgment: Special thanks to the participants and to the staff of Banoon IVF center for their cooperation and commitment.

Keywords: breast cancer, infertility, Sudanese women.

I. Introduction

Infertility is "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse. [(1)]

Infertility results from female factors about one-third of the time and male factors about one-third of the time. The cause is either unknown or a combination of male and female factors in the remaining cases. Female infertility causes can be difficult to diagnose. There are many available treatments, which will depend on the cause of infertility. Many infertile couples will go on to conceive a child without treatment. After trying to get pregnant for two years, about 95 percent of couples successfully conceive. [(2)]

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Major Causes of Infertility

a) Ageing

A woman's age is the most significant factor influencing her fertility. Women are born with a fixed number of eggs and so as they age so do their eggs. A woman's fertility starts to decline in her early 30s and by age 35 it has dropped by approximately 40%. By age 40 a woman's fertility has declined even further. In addition, as women age conditions like endometriosis can also progress to a level where they may impact on fertility as well (see endometriosis below). Unfortunately, there appears to be a lack of recognition of the impact that age has on fertility. Celebrities having babies in their 40s, for example, has given many women the impression they can leave their childbearing to later in life. Similarly, many women falsely believe that infertility treatments like IVF can overcome any fertility issues. The latest figures on assisted reproductive technology in Australia and New Zealand show that for women aged 30-34 years the chance of a live birth per treatment cycle was 25.3%. For women aged 35-39, this percentage dropped to 16.9% and for women 40-44 years it was only 6.6%.

b) Polycystic Ovarian Syndrome (PCOS)

PCOS is a hormone imbalance which results in disrupted menstrual and ovulation cycles. It is the most common cause of infertility due to an ovulation (no ovulation or egg is released). The name of the condition comes from the presence of tiny cysts on the outside of the ovaries. While many women have polycystic ovaries, not all women have polycystic ovarian syndrome. Women with PCOS have additional symptoms including irregular periods, excess weight (particularly in the tummy area), and excess hair on the face and body, acne and male pattern baldness. It is estimated that 30% of infertile women suffer from PCOS.

c) Endometriosis

Endometriosis is a condition in which the tissue that lines the uterus (endometrial tissue) grows in other parts of the body, usually in the pelvis. This stray endometrial tissue bleeds in the same way as the lining of the uterus, except the blood/tissue is trapped causing irritation and inflammation. Scar tissue can form resulting in adhesions which can stick pelvic structures together. The most common symptoms of

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endometriosis are period pain and/or pelvic and abdominal pain. Endometriosis can affect fertility by damaging the ovaries so that ovulation cannot occur. Similarly, damage and/or blockages to the inside of the fallopian tubes can impede the journey of the egg to uterus. It is also thought that endometriosis can have an impact on the lining of the uterus, affecting the implantation of a fertilized egg. If women experience pain during sex from endometriosis they might also be reluctant to have sex, reducing their chances of getting pregnant.

d) Weight

A woman's weight is an important consideration in her fertility. Women who are underweight and/or have a low percentage of body fat (i.e., athletes) can experience irregular menstrual cycles and issues with ovulation. Being overweight or obese can also interfere with normal menstruation and ovulation. In addition, overweight and obese women also have a higher risk of miscarriage and other pregnancy complications and a lower success rate with infertility treatments such as IVF. Women who find it difficult to lose weight should be assessed to see if they have PCOS (see above) as this is a common symptom. Women can often improve their chances of pregnancy by relatively small changes to their weight. For example, in women who are overweight or obese, a 5% weight loss can be enough to restore a regular menstrual cycle and ovulation.

e) Sexually Transmitted Infections

If a STI such as chlamydia or gonorrhea goes untreated it can lead to pelvic inflammatory disease (PID). PID is the infection or inflammation of the organs and tissues in the pelvis. Unfortunately, women infected with a STI, particularly chlamydia, don't always experience any symptoms or the symptoms are vague so they do not seek treatment. If PID is left untreated it can cause scarring in the fallopian tubes which can narrow them, blocking the path of the egg. If a fertilized egg becomes trapped in a blocked fallopian tube an ectopic pregnancy can occur (where the fetus develops outside the uterus). This is a serious, potentially life-threatening health condition that requires immediate medical attention. Studies suggest that one episode of PID decreases a woman's chance of a successful pregnancy by 10%. After two or more episodes of PID a woman's risk of becoming infertile is about 50%.[3]

Cancer and its treatment can sometimes affect a woman's ability to have children. [4]Cancer treatments that can affect in fertility include chemotherapy, radiotherapy, and surgery on your reproductive organs, including the ovaries. It can be difficult to know what the effects of the cancer treatment will be until much later. Many people who are treated for cancer, especially those treated for cancer as children, remain fertile and go on to have a family of their own in later life. Some find that their fertility is affected for a short time and then recovers when treatment has finished, but others find their fertility is affected for longer. It often depends on your individual circumstances, such as your age, the treatment you receive. [5]

Some treatments for breast cancer can cause temporary infertility or make it harder for you to get pregnant after treatment ends. Other treatments cause permanent and irreversible menopause, which means you are permanently infertile. [6] Breast cancer patients treated with chemotherapy run the risk of developing premature ovarian failure or very early menopause. [7]

Both infertility and breast cancer regarded as global health problems and many women in the Sudan were affected by one or both of them.

Study done by Intisar E Saeed et al, Khartoum, 2009, showed that The ASRs of breast cancer in women living in Khartoum State, using the 1966 and 2000 WSP, were 60.8 and 66.8 per 100,000, respectively, which were higher than what reported in black women in Harare, Zimbabwe (46.8 per 100,000, 2006–2010), and in Kampala, Uganda (31.0 per 100,000, 1991–2006) in East Africa. The incidence rate of breast cancer in women in Khartoum was also higher compared to North Africa, such as in Benghazi, Libya with an ASR of 22.9 per 100,000 in 2003, 24.1 per 100,000 in Tunis, Tunisia (1993–1997), and 49.6 per 100,000 in Garbiah, Egypt (1999–2000).

II. Literature Review

There is no previous data about the prevalence of breast cancer among infertile women in or out of the Sudan.

III. Justification

There is no published data about the prevalence of breast cancer among infertile Sudanese women.

IV. Objectives

To know the prevalence of breast cancer among selected group of infertile Sudanese women attended to Banoon IVF center, Khartoum, Sudan, 2016.

V. Materials and Methods

Study Design: Descriptive, Cross Sectional Study.

Study Period: January-December, 2016.

Study Population: Known Infertile Women.

VI. Selection Criteria

a) Inclusion Criteria

- Infertile
- Sudanese
- Woman

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b) Exclusion Criteria

- Fertile
- Nationality other than Sudanese
- Man

c) Sample Size: 100

d) Data Collection: By Questionnaire.

VII. Ethical Consideration

All participants were informed about the goals of the study and they were consent to be involved in the study.

VIII. Result

The prevalence of breast cancer among the study group was: 6%.

IX. Discussion

Some treatments for breast cancer can cause temporary infertility and other treatments cause permanent and irreversible menopause, which means you are permanently infertile. Breast cancer patients treated with chemotherapy run the risk of developing premature ovarian failure or very early menopause then the prevalence of infertility among the study group was high.

X. Conclusion

Further studies must be done involving women from many nationalities and with large sample size.

Acknowledgement

Special thanks to the participants and to the staff of Banoon IVF center for their cooperation and commitment.

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The Prevalence of Cancer among Selected Group of Sudanese Women with Fertility Problems

By Mohamed A. Gafoor A. Gadir, Mohammed Omer Mohammed & Mosab Nouraldein Mohammed

Banoon IVF center

Abstract- *Background:* Infertility is the major problem in the world and it occur due to many reasons one of in certain conditions is treatment of cancer.

Justification: There is no published data concerning the association between cancer and infertility.

Objectives: To know the prevalence of cancer among selected group of Sudanese ladies with fertility disorders.

Method: Descriptive, cross sectional study, from March–May, 2016, at Banoon IVF center, Khartoum, Sudan, 100 Sudanese women with fertility disorders were involved in the study.

Result: The prevalence of cancer among the selected group was 10% (6% was breast cancer, 4% other types of cancer).

Discussion: The prevalence of cancer among the study group was high and that may give us a link between cancer and infertility with strength of this link was increased among the participants with breast cancer.

Keywords: *cancer, female infertility, Sudanese.*

GJMR-E Classification: *NLMC Code: WP 570*



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The Prevalence of Cancer among Selected Group of Sudanese Women with Fertility Problems

Mohamed A. Gafoor A. Gadir [α], Mohammed Omer Mohammed [σ] & Mosab Nouraldein Mohammed [ρ]

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Discussion: The prevalence of cancer among the study group was high and that may give us a link between cancer and infertility with strength of this link was increased among the participants with breast cancer, then our study agree with the previous study done by Kutluk Oktay et al that showed association between breast cancer and infertility.

Conclusion: Further studies should be done involving large sample size from different races.

Acknowledgement: To all persons whom participated in the study.

Keywords: cancer, female infertility, Sudanese.

I. Introduction

Infertility is a condition of the reproductive system that prevent the conception of children. It affects approximately 10-15% of couples throughout the United States. The diagnosis of infertility is usually given to couples who have been attempting to conceive for at least 1 year without success. (1)

Global infertility prevalence rates are difficult to determine, due to the presence of both male and female factors which complicate any estimate which may only address the woman and an outcome of a pregnancy diagnosis or live birth. One in every four couples in developing countries had been found to be affected by infertility. (2)

When the cause of infertility exists within the female partner, it is referred to as female infertility. Female infertility factors contribute to approximately 50% of all infertility cases, and female infertility alone accounts for approximately one-third of all infertility cases. The most common causes of female infertility include problems with ovulation, damage to fallopian tubes or uterus, or problems with the cervix. Age can contribute to infertility because as a woman ages, her fertility naturally tends to decrease. (3)

The risk of infertility from cancer treatment depends on many things, like your cancer type, age and pre-treatment fertility status. Treatment specifics such as duration and dose of chemotherapy or radiation and location and scope of surgery or radiation also impact fertility. Specifically, treatment can cause the following:

- The ovaries no longer contain a supply of health eggs
- Damage to the reproductive system prevents a fertilized egg from successfully implanting and growing in the uterus
- Damage to the reproductive system prevents you from being able to carry a pregnancy.(4)

Chemotherapy can stop your ovaries from working. This causes infertility, which can be temporary or permanent. It can also bring on the menopause.

a) Temporary Infertility

With temporary infertility, your periods may become irregular or stop during treatment. But they'll go back to normal once your treatment is over.

This happens in about a third of all women whose periods stop because of chemotherapy. It takes about 6 to 12 months for your periods to go back to normal.

b) Permanent Infertility

Permanent infertility is more likely if you have higher doses of the drugs. It's also more likely in older women than young women – especially if you're getting close to the age where you'd naturally have the menopause.

Some chemotherapy drugs can be very damaging to the eggs in your ovaries, so that none are left after treatment. If this happens, you can no longer get pregnant and you might have symptoms of the menopause.(5)

It is also known that there is a higher rate of obstetric complications in patients who have received radiation treatment in comparison with the general population; complications include spontaneous abortions, preterm labor and low-birth weight infants. (6)

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II. Literature Review

Study done by Kutluk Oktay et al showed that; BRCA1 mutations are associated with occult primary ovarian insufficiency. This finding may, at least in part, explain the link between infertility and breast/ovarian cancer risks. [7]

III. Justification

There is no published data concerning the association between cancer and infertility.

IV. Objectives

To know the prevalence of cancer among selected group of Sudanese ladies with fertility disorders.

V. Material and Method

Study Design: Descriptive, cross sectional study.

Study Population: Sudanese infertile females attended to Banoon IVF center, Khartoum, Sudan.

Study Period: March-May, 2016.

Sample Size: 100 Participants.

Data Collection: Data was collected via questionnaire.

VI. Ethical Consideration

All participants were informed about the purpose of the study and all of them were consent.

VII. Result

The prevalence of cancer among the selected group was 10% (6% was breast cancer, 4% other types of cancer).

VIII. Discussion

The prevalence of cancer among the study group was high and that may give us a link between cancer and infertility with strength of this link was increased among the participants with breast cancer , then our study agree with the previous study done by Kutluk Oktay et al that showed association between breast cancer and infertility.

IX. Conclusion

Further studies should be done involving large sample size from different races.

Acknowledgement

To all persons whom participated in the study.

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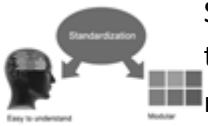


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AUXILIARY MEMBERSHIPS

Institutional Fellow of Open Association of Research Society (USA) - OARS (USA)

Global Journals Incorporation (USA) is accredited by Open Association of Research Society, U.S.A (OARS) and in turn, affiliates research institutions as "Institutional Fellow of Open Association of Research Society" (IFOARS).



The "FARSC" is a dignified title which is accorded to a person's name viz. Dr. John E. Hall, Ph.D., FARSC or William Walldroff, M.S., FARSC.

The IFOARS institution is entitled to form a Board comprised of one Chairperson and three to five board members preferably from different streams. The Board will be recognized as "Institutional Board of Open Association of Research Society"-(IBOARS).

The Institute will be entitled to following benefits:

The IBOARS can initially review research papers of their institute and recommend them to publish with respective journal of Global Journals. It can also review the papers of other institutions after obtaining our consent. The second review will be done by peer reviewer of Global Journals Incorporation (USA) The Board is at liberty to appoint a peer reviewer with the approval of chairperson after consulting us.

The author fees of such paper may be waived off up to 40%.

The Global Journals Incorporation (USA) at its discretion can also refer double blind peer reviewed paper at their end to the board for the verification and to get recommendation for final stage of acceptance of publication.





The IBOARS can organize symposium/seminar/conference in their country on behalf of Global Journals Incorporation (USA)-OARS (USA). The terms and conditions can be discussed separately.

The Board can also play vital role by exploring and giving valuable suggestions regarding the Standards of "Open Association of Research Society, U.S.A (OARS)" so that proper amendment can take place for the benefit of entire research community. We shall provide details of particular standard only on receipt of request from the Board.



The board members can also join us as Individual Fellow with 40% discount on total fees applicable to Individual Fellow. They will be entitled to avail all the benefits as declared. Please visit Individual Fellow-sub menu of GlobalJournals.org to have more relevant details.

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We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.



After nomination of your institution as "Institutional Fellow" and constantly functioning successfully for one year, we can consider giving recognition to your institute to function as Regional/Zonal office on our behalf.
The board can also take up the additional allied activities for betterment after our consultation.

The following entitlements are applicable to individual Fellows:



Open Association of Research Society, U.S.A (OARS) By-laws states that an individual Fellow may use the designations as applicable, or the corresponding initials. The Credentials of individual Fellow and Associate designations signify that the individual has gained knowledge of the fundamental concepts. One is magnanimous and proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice.

Open Association of Research Society (US)/ Global Journals Incorporation (USA), as described in Corporate Statements, are educational, research publishing and professional membership organizations. Achieving our individual Fellow or Associate status is based mainly on meeting stated educational research requirements.



Disbursement of 40% Royalty earned through Global Journals : Researcher = 50%, Peer Reviewer = 37.50%, Institution = 12.50% E.g. Out of 40%, the 20% benefit should be passed on to researcher, 15 % benefit towards remuneration should be given to a reviewer and remaining 5% is to be retained by the institution.

We shall provide print version of 12 issues of any three journals [as per your requirement] out of our 38 journals worth $ 2376 USD.

Other:

The individual Fellow and Associate designations accredited by Open Association of Research Society (US) credentials signify guarantees following achievements:

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- In addition to above, if one is single author, then entitled to 40% discount on publishing research paper and can get 10%discount if one is co-author or main author among group of authors.
- The Fellow can organize symposium/seminar/conference on behalf of Global Journals Incorporation (USA) and he/she can also attend the same organized by other institutes on behalf of Global Journals.
- The Fellow can become member of Editorial Board Member after completing 3yrs.
- The Fellow can earn 60% of sales proceeds from the sale of reference/review books/literature/publishing of research paper.
- Fellow can also join as paid peer reviewer and earn 15% remuneration of author charges and can also get an opportunity to join as member of the Editorial Board of Global Journals Incorporation (USA)
- • This individual has learned the basic methods of applying those concepts and techniques to common challenging situations. This individual has further demonstrated an in–depth understanding of the application of suitable techniques to a particular area of research practice.

Note :

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- In future, if the board feels the necessity to change any board member, the same can be done with the consent of the chairperson along with anyone board member without our approval.
- In case, the chairperson needs to be replaced then consent of 2/3rd board members are required and they are also required to jointly pass the resolution copy of which should be sent to us. In such case, it will be compulsory to obtain our approval before replacement.
- In case of "Difference of Opinion [if any]" among the Board members, our decision will be final and binding to everyone.

"

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

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Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

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It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

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- Ideas
- Findings
- Writings
- Diagrams
- Graphs
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2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

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Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

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Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

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Tips for writing a good quality Medical Research Paper

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



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6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.



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Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



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Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

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Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

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Describe generally acknowledged facts and main beliefs in present tense.

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Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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