

Original Research Article

Awareness of combined oral contraceptives use among Jordanian women: A cross-sectional study

Deema Jaber^{1*}, Linda Tahaineh², Amal Akour³, Abba Albsoul-Younes³

¹Department of Clinical Pharmacy, School of Pharmacy, Zarqa University, Zarqa, ²Department of Clinical Pharmacy, College of Pharmacy, Jordan University of Science and Technology, Irbid 22110, ³Department of Biopharmaceutics and Clinical Pharmacy, Faculty of Pharmacy, University of Jordan, Amman 11942, Jordan

*For correspondence: **Email:** dsuleiman@zu.edu.jo; **Tel:** 00962-781703033

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Abstract

Purpose: To investigate Jordanian women's knowledge, attitude, awareness and practice regarding combined oral contraceptives (COCs) benefits and risks.

Methods: A cross-sectional study was conducted on 300 Jordanian women attending the Obstetrics and Gynecology clinics at Jordan University Hospital, Amman, Jordan. A closed- and open-ended questionnaire was used to explore Jordanian participants' knowledge, attitude and practice regarding COCs use, effect and side effects. Structured interviews were conducted by a trained research team. Thus, it was a pharmacist-assisted survey, and lay language was used to explain difficult medical terminology

Results: Most of participants were prescribed COCs by their physicians (77.1 %), half of them depend on others' experiences and media as sources of information rather than consulting their healthcare team. Half of participants have an idea of non-contraception uses of COCs (50.3 %). One fourth of women (26.0 %) believed that using COCs decreases fertility or even causes infertility, especially if used before their first pregnancy (43.3 %). Women in their middle age were more uncertain about the relation between COCs use and anemia ($p = 0.014$) or dysmenorrhea pain ($p = 0.005$). While women who used COCs believed more that the pills regulate menstruation ($p < 0.001$) and decrease dysmenorrhea pain ($p < 0.001$) compare with women who had never used COCs pills. Women in general are uncertain if COCs use has negative or positive relation with some types of cancer such as ovarian, cervical and breast. Women who are not affiliated to the healthcare professions were more uncertain about the relation between COCs use and atherosclerosis risk ($p = 0.002$), MI ($p = 0.025$) and stroke risk ($p = 0.035$).

Conclusion: There is insufficient awareness and knowledge of the beneficial and non-contraceptive uses of COCs. Educational programs are needed to improve women's awareness of the benefits and risks of COCs.

Keywords: Combined oral contraceptives, COCs, Knowledge, Attitude, Practice, Beliefs, Benefits, Risks

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INTRODUCTION

Unintended pregnancy may pose risk on women's and infants' health and increase medical cost on both governments and individuals [1]. There are various methods of contraception including, hormonal contraceptives such as combined oral contraceptives (COCs), implant or intra uterine device (IUD), condoms and vasectomy or tubal ligation [2]. Contraceptive methods differ in their efficacy, safety, cost and convenient use [3].

COCs are widespread, effective and reversible contraceptive approach used worldwide [4]. COCs provide many non-contraceptive indications such as treating dysfunctional uterine bleeding, organizing menstrual cycle irregularity (breakthrough bleeding and amenorrhea) and treating androgenisation symptoms (seborrhea, acne, hirsutism, alopecia) [5]. Minor adverse effects such as nausea, headache, breast tenderness, and weight gain are tolerable, easier to manage and mostly reversible. While major adverse effects and risks need medical intervention include severe headache, deep vein thrombosis (DVT), stroke and increasing risk of some cancers like breast cancer and cervical cancer [6].

Women's knowledge, beliefs and experiences regarding side effects and risks of COCs can impact their willingness to use or continue using COCs [7]. Women with negative intolerable side effects complaints are more likely to discontinue using oral contraceptives (OC) [8]. On the other hand, women who knew the non-contraceptive benefits of the pills or had previous experience of using the pills with few side effects were more satisfied with their use [9].

Here in Jordan and according to the demographic health survey (DHS) results at 2012; the births per woman for the 3 years prior to the survey is 3.5 and around 42 % of Jordanian married women are using a method of contraception; mainly the IUD (21 %) followed by hormonal contraceptive pill (8 %) and male condom (8 %) [10]. Several studies were conducted to investigate contraception use among Jordanian women [11-13]. Nevertheless; no recent studies have been conducted since the last two decades to address this subject, so there is a need to explore Jordanian women knowledge, attitude, awareness and practice towards COCs use. Hence, the current study was conducted to explore baseline knowledge, attitude, beliefs and practice of Jordanian women regarding effect/side effects and benefits/risks associated with COC pills use. Another objective

was to investigate information resources utilized by Jordanian women concerning COCs benefits and risks.

METHODS

This cross-sectional study was conducted in Jordan University Hospital (JUH), the largest teaching hospital in Amman, the capital city of Jordan. Participants' were recruited over a period of six months from July to December 2013. Participants' interviews were conducted in Obstetrics and Gynecology clinics at JUH. Ethical approval was obtained from the Institutional Review Board (IRB) at JUH.

A closed and open-ended questionnaire was used to explore Jordanian participants' knowledge, attitude and practice toward the COCs use, effect and side effects. Structured interviews were conducted by the trained research team so this is a pharmacist-assisted survey and lay language was used to explain difficult medical terminology.

A convenience non-random sampling approach was used to recruit women who were older than 17 years and eligible for study entry. Women were invited to participate and provided with full related information about the study aims. Signed participation informed consents were obtained based on a standard written statement.

During the anonymous questionnaire development and in order to ensure the content validity, an inclusive literature review was conducted. Furthermore, in order to ensure face validity, the prepared questionnaire was evaluated individually by two clinical pharmacists, one statistician and one sociologist. After that pilot testing and discussions were performed to confirm questions clarity. The study was piloted on around 30 educated and non-educated women before the formal start of the data collection. Accordingly, few questions were changed and these data were excluded from the final analysis.

The questionnaire consisted of four parts; the first part was considered to collect patient information including age, education, occupation, medical affiliation and marital status. The second part assessed patients' knowledge, attitude, awareness and practice toward COCs use, effects/side effects, and benefits/risks ratio. Participants were asked to express their views and beliefs on the effect of COCs use on conception, infertility, and menstruation. The relationship between COCs use and probable risks such as breast or/and cervical cancers,

cardiovascular and cerebral complications. The expected benefits obtained from COCs use such ovarian cancer prevention, anemia and dysmenorrhea. The third part assessed the patient's pattern of COCs use in case of missed doses, what are the sources of information they need about COCs and what is their reference of consultation if there is any question about COCs use.

The last part was designed especially for women who had used COCs at least once during their lifetime. It was designed to collect patient information about patients' pattern of COCs use; including the duration of COCs use, the starting time of COCs in relative to participant's pregnancies schedule (before 1st pregnancy, after 1st pregnancy, after 2nd pregnancy or at any time), any baseline physical examination and laboratory checkup (the uterus, pelvic, breast examination and lipid profile monitoring), and whether or not women had received doctor's/pharmacist consultation or prescription before using the pill.

Data analysis

Data were coded and entered using the Statistical Package for Social Sciences (SPSS[®], version 22.0) database for statistical analysis. Descriptive statistics with corresponding 95% confidence intervals (CIs) were constructed. Differences between the various groups were evaluated using the chi-square test and Fisher exact test for categorical variables. ANOVA for normally distributed continuous data were used, while Kruskal–Wallis test and Spearman correlation were used for skewed variables as appropriate. *P* values less than 0.05 were considered statistically significant.

RESULTS

The questionnaire was delivered by hand to a target sample of 380 women, three hundred women between the ages of 17 and 54 years completed the questionnaires with a response rate of 79 %. It revealed that the majority of women (68.6 %) were educated (diploma degree or higher) but mostly not affiliated in the medical field (81.0 %). Almost two thirds of the women never used the COCs while around 39.0 % of them used COCs at least once in their life. Demographic details are shown in Table 1.

When asked about their source of information regarding COCs uses, benefits, side effects, and complications, it appeared that around half of the participants (52.0 %) depend on self and people experiences as a source of information. On the

other hand, only 13.6 % of them depend on media, television and other sources such as internet to get information needed. The majority of them (79.9 %) confirmed that they will ask the doctor if they have any question, but a small percent (4.7 %) of them will ask the pharmacist, data are summarized in Table 2.

Table 1: Demographic profile of women who responded to the questionnaire (N = 300*)

Parameter	Frequency (%)
Age (years)	
Mean (± SD)	32.8 (± 8.71)
Range	17 - 54 years
Education level	
Illiterate	5 (1.7%)
High school	89 (29.7%)
Diploma	55 (18.3%)
Bachelor	151 (50.3%)
Healthcare affiliation	
Yes (medicine, pharmacy, nursing and others)	31 (10.3%)
No	243 (81.0%)
Marital status	
Single	56 (18.7%)
Married	234 (78.0 %)
Others (e.g., divorced, widow)	9 (3.0%)
Use of COCs	
Yes	117 (39.0%)
Always	12 (4.0%)
Currently	16 (5.3%)
Previously	89 (29.7%)
Never used	183 (61.0%)

*Some data are missing; hence, totals do not always add to 300

Table 2: Source of information about combined oral contraceptives (COCs) uses, effects and side effect (N = 300*)

Parameter	Frequency (%)
Source of information about COCs	
World Health Organization (WHO) centers (primary Mother and Child health care centers)	64 (21.3)
Self-Experience	37 (12.3)
People Experience	119 (39.7)
Media and Television	43 (14.3)
Others (e.g. Internet)	28 (9.3)
If you have a question, you will ask	
Physician	239 (79.9)
Pharmacist	14 (4.7)
Relatives, friends and women who used the COCs	26 (8.7)
Others	11 (4.05)

*Some data was missing, subsequently totals do not always add to 300

Table 3 summarizes the data obtained particularly from the participants who used COCs at least once in their life (N = 118). Around 79 % of them have 1 to 6 children and all of them used COCs for contraception. More than one third of the participants used COC pills for less than one year, half of them used the pills for a duration ranged from 1 to 9 years (50.8 %) with small percent still used the pills for more than 9 years (8.5%).

Table 3: Profile of participants who used combined oral contraceptives (COCs) at least once in their life, (n =118*)

Variable	Frequency (%)
Number of children	
None	5 (4.2)
1-3	51 (43.2)
4-6	42 (35.6)
> 7	13 (11.0)
Duration of COCs use	
Less than 1 year	44 (37.3)
1-3 years	42 (35.6)
4-6 years	13 (11.0)
7-9 years	5 (4.2)
More than 9 years	10 (8.5)
The usage time of COCs in relation with pregnancy	
Before first pregnancy	12 (10.2)
After first delivery	36 (30.5)
After second delivery	23 (19.5)
After third delivery or more	17 (14.4)
At any time	4 (3.4)
COC pills prescribed by	
Physician	91 (77.1)
World Health Organization (WHO) centers (primary Mother and Child health care centers)	9 (7.6)
Pharmacist	4 (3.4)
Relatives/friends	2 (1.7)
Others	10 (8.5)
Doctor consultation/advice before use	
Yes	36 (30.5)
No	60 (50.8)
Baseline physical examination or lab monitoring	
Yes	26 (22.0)
Uterus examination	15 (12.7)
Pelvic examination	5 (4.2)
Breast examination	5 (4.2)
Lipid Profile	1 (0.8)
No	92 (78.0)

*Some data was missing, subsequently totals do not always add to 118

Only 10.2 % of women used COC pills just after marriage and before the first pregnancy, but the

remaining used the pills after first (30.5 %), second (19.5%) or third (14.4 %) deliveries. Most of participants were prescribed COC pills by their physicians (77.1 %), but only half of them don't obtain advice or consultation about their use (50.8 %). Only around 22.0 % of women had baseline physical examination including uterus, pelvic and breast examination before COC pills prescription, while the majority didn't have any baseline checkup before the prescription (78.0 %).

Table 4: Perceptions, believes and attitudes of women regarding the safety of combined oral contraceptives (COCs) use, (n = 300*)

Parameter	Frequency (%)
Thinks COC pills are safe	
Yes	74 (24.7)
No	61 (20.3)
Don't know	162 (54.0)
Thinks COC pills have uses other than contraception	
Yes	151 (50.3)
No	27 (9.0)
Don't know	122 (40.7)
Effect of COCs use on reproduction	
Decrease the ability to conceive	67 (22.3)
Increase the ability to conceive	5 (1.7)
Causes infertility	11 (3.7)
Has no effect on conception at all	116 (38.7)
Don't know	100 (33.3)
COCs may decrease fertility/cause infertility if used	
Before the first pregnancy	130 (43.3)
Before the second pregnancy	21 (7.0)
Before the third pregnancy	7 (2.3)
At any time	30 (10.0)
Has no effect on conception at all	110 (36.7)
Effect of COCs use on menstruation	
COCs use organizes menstruation	175 (58.3)
COCs use disorganizes menstruation	62 (20.7)
Has no effect on menstruation	15 (5.0)
Don't know	48 (16.0)

*Some data was missing, subsequently totals do not always add to 300

As shown in Table 4, almost one fourth of women considered COCs use as safe. About 20 % of women considered it as harmful, while, 40.0 % of them were not sure about the safety of using COCs. Half of participants do have an idea for uses of COC pills other than contraception

(50.3 %). About one fourth of women (26.0 %) believed that using COCs will decrease fertility or even cause infertility especially if used before the first pregnancy (43.3 %). Although 38.7 % of women believed that COCs use doesn't affect fertility totally. A good percent of women believe that COC pills do have positive effect in organizing menstruation (58.3 %).

The participants were asked about the relation between the use of COCs and probable complications such as some types of cancer (e.g. cervical and breast), cardiovascular/cerebral complications (e.g. atherosclerosis, stroke and myocardial infarction), Deep venous thrombosis (DVT) and weight gain. They were also asked about the relation between the use of COCs and their benefits against anemia dysmenorrhea

pain, ovarian and endometrial cancer. These data are summarized in Table 5 and Table 6.

Table 5 shows women's knowledge, attitude, believe and practice regarding the relation between the COCs and different expected benefits, while table 6 shows women's knowledge, attitude, believe and practice regarding the relation between the COCs and different expected risks. Women in the middle age (25 - 35 years) were more uncertain about the relation between COCs use and anemia ($p = 0.014$) or dysmenorrhea pain ($p = 0.005$). While women who used COCs believed more that the pills regulate menstruation ($p < 0.001$) and decrease dysmenorrhea pain ($p < 0.001$) versus women who never used COCs pills.

Table 5: Perceptions, believes and attitudes of women regarding the beneficial use of combined oral contraceptives (COCs), (n = 300*)

Variable	Frequency (%)	P-value
Anemia		
COCs prevent anemia	19 (6.3%)	0.014
COCs causes anemia	13 (4.3%)	
No relation	94 (31.3%)	
I don't know	174 (58.0%)	
Dysmenorrhea pain		
COCs decrease dysmenorrhea pain	52 (17.3%)	0.005
OCs increase dysmenorrhea pain	41 (13.7%)	
No relation	100 (33.3%)	
I don't know	107 (35.7%)	
Ovarian and endometrial cancer		
COCs protect against ovarian and endometrial cancer	40 (13.3%)	NS
COCs cause ovarian and endometrial cancer	34 (11.3%)	
No relation	53 (17.7%)	
I don't know	170 (56.7%)	

*Some data was missing, subsequently totals do not always add to 300, NS: not significant

Women in general are uncertain if COCs use has negative or positive relation with some types of cancer such as ovarian, cervical and breast. When questioning women regarding COCs use and risks; women who are not affiliated in the medical field were more uncertain about the relation between COCs use and atherosclerosis ($p = 0.002$), MI ($p = 0.025$) and stroke ($p = 0.035$). On the other hand, Women in general are uncertain if COCs use has negative relation with DVT. Regarding weigh gain, there was a significant difference between married women and single women in regard to beliefs; that is married women believed that COCs use increases body weight more than single ones ($p = 0.02$) and women who never used COCs believed that the pills increase body weight more than COCs users ($p = 0.002$). The detailed results are summarized in Table 5 and Table 6.

Non-users of COCs (61.0% of participants) were more uncertain about the safety of using COCs ($p < 0.001$), believe more that COCs use decrease fertility ($p < 0.001$), don't know the presence of non-conception uses for COCs ($p = 0.016$) and believe more that COCs use increase weight ($p = 0.002$) depending on non-official sources of information such as internet and media ($p < 0.001$) than COCs users.

DISCUSSION

Results of this study show lack of knowledge by most women regarding benefits and risk of COCs. More than half of women reported that they get their information from self and people experiences as a source of information, less depend on mass media. Only few respondents refer to the pharmacists to answer their questions about COCs use.

Table 6: Perceptions, believes and attitudes of women regarding the risks from combined oral contraceptives (COCs) use, (N = 300*)

Variable	Frequency (%)	P-value
Cervical/breast cancer		
COCs cause cervical/breast cancer	31 (10.3%)	NS
COCs protect against cervical/breast cancer	37 (12.3%)	
No relation	54 (18.0%)	
I don't know	177 (59.0%)	
Cardiovascular/cerebral diseases		
Atherosclerosis		
COCs increase the risk of atherosclerosis if other risks present	46 (15.3%)	0.002
COCs protect against atherosclerosis	14 (4.7%)	
No relation	61 (20.3%)	
I don't know	179 (59.7%)	
Myocardial infarction (MI)		
COCs increase the risk of MI if other risks present	54 (18.0%)	0.025
COCs protect against MI	19 (6.3%)	
No relation	61 (20.3%)	
I don't know	165 (55.0%)	
Stroke		
COCs increase the risk of stroke if other risks present	32 (10.7%)	0.035
COCs protect against stroke	13 (4.3%)	
No relation	79 (26.3%)	
I don't know	173 (57.7%)	
Blood pressure (BP)		
COCs increase the BP slightly	70 (23.3%)	NS
COCs decrease the BP	14 (4.7%)	
Not affect the BP	64 (21.3%)	
I don't know	148 (49.3%)	
Deep venous thrombosis (DVT)		
COCs increase DVT formation in high susceptible women	12 (4.0%)	NS
COCs decrease DVT formation in high susceptible women	6 (2.0%)	
No relation	104 (34.7%)	
I don't know	176 (58.7%)	
Weight gain		
COCs increase the body weight	205 (68.3%)	0.02
COCs decrease the body weight	15 (5.0%)	
Not affect the body weight	32 (10.7%)	
I don't know	44 (14.7%)	

*Some data was missing, subsequently totals do not always add to 300, NS: not significant, vs: versus

Although COCs are the second most commonly used method for contraception in Jordan [10], there is a lack of knowledge regarding COCs efficacy and safety among Jordanian women. Gharaibeh *et al*, through their study found that there is no correlation between religious stance and contraception use. However, there was significant relationship between psychological comfort of participants and use of contraception [13]. On the other hand, Kridli and Newton investigated the relationship between OC previous consumption and intention to use them among 245 Jordanian married Muslim women. The results showed significant correlation between OC previous consumption and intention to use. However, there was no significant relationship between intention to use OC and selected demographic variables such as education, primary occupation and others. Moreover, the study found that family planning and protection places (40.9 %) followed by

private doctor's office (38.4 %) are the most common places for participants to obtain contraception services. Interestingly, pharmacy was the least commonly used place to obtain contraception services [12].

According to Albsoul-Younes *et al*, study that examined perceptions of working Muslim Jordanian women towards the effectiveness and complications of their contraceptive techniques, it was found that concerns about safety were the main cause of discontinuation of contraception pills [11]. They reported that main methods used are intrauterine devices supplied freely from primary mother and child health care centers [11].

Fertility return after discontinuation of COC pills is a big concern among participants since more than half of them believe that COCs use causes infertility especially among the non-users of

COCs. It was thought that COC pills affect fertility however, there is no study that proves this and the effect depends on the use duration and the estrogen dose used. Many studies investigated the effect of COC pills on fertility using different formulations showed that using COC pills is associated with short-term delay in the return to fertility [14]. Bagwell *et al*, reported that both the use and the dose of combined OC were associated with a lower frequency of primary infertility among young women [15]. Nevertheless, current study showed that around 40 % of participants used COC pills in their first period of marriage (before the first pregnancy or after the first delivery) and around half of participants (users and non-users of COCs) do believe that such use of COCs in the first period of marriage decrease the fertility or even causes infertility, and 43.3 % of the users believed that the risk of infertility increased if COCs were used before the first pregnancy. On the other hand, Hassan and Killick in their study concluded that a significant reduction in fecundity occurs after long term use of COCs, IUD or injectables [14].

Most of the recruited women were unsure about the relation between COCs use and cardiovascular/cerebral complication risks of atherosclerosis, vascular thrombosis, ischemic heart disease and stroke. Studies have shown that COCs use is associated with increased risk of cardiac and vascular complications, where women with thrombosis risk factors get benefit from newer agents such as progestin-only OCs which do not raise thrombosis risks [16].

The need to assess COCs relationship with different forms of cancer became a hot area for research. Many studies investigated COCs effects on cancer, their result varied from increasing the risk of some types to neutral effect or even considered as protective factor for some types of cancer [17]. Studies showed that COCs use is associated with increased risk of breast and cervical cancers especially with increasing duration of use [18,19]. However, COC use is linked to a significant reduction in the risk of ovarian, endometrial and colorectal cancers [17,20]. This risk reduction is greater with increasing duration of use and persists for 30 or more years after cessation of use [17]. Most of the participants in the current study were uncertain about both the beneficial and harmful relation of COCs use and different types of cancer.

Combined oral contraceptive pills can be used for many purposes other than contraception; the American College of Obstetricians and Gynecologists (ACOG) clarified non-

contraceptive use of COC pills [21]. These non-contraceptive uses are related to the menstrual cycle including regulation of the menstrual cycle, premenstrual syndrome, menorrhagia and dysmenorrhea [21]. Recruited participants did not know the COCs non-contraceptive uses and their beneficial effect of COCs use against anemia, dysmenorrhea pain and menstruation organization.

Weight gain is usually considered an adverse effect of COCs, and many women and physicians believe that a relationship exists between weight gain and COCs use that has led to COCs discontinuation in most cases in many developed countries [22]. This fact explains the expected reason why many Jordanian women refuse to take COCs in this study more of the non-users believe more COCs use causes weight gain ($p = 0.002$). A recent large intervention review evaluated the potential correlation between contraceptive use and increase in weight and concluded that obtainable evidence was inadequate to determine the effect of combination contraceptives on weight [22]. Almost three-quarters of married women who had an experience in using COCs during their life believe that weight gain was related to COCs use ($p = 0.02$).

Only one fourth of participants received baseline uterus, pelvic and breast examination and underwent basal laboratory monitoring. Such examination findings do not influence the judgment to prescribe or hold COCs; so according to ACOG guidelines such examinations are not needed prior to COCs initiation [23]. On the other hand, these examinations are usually established practices preceding hormonal contraception use and to determine whether women should receive hormonal contraceptives or not in order to decrease the risk of expected complications [24]. Clinicians worldwide necessitate such examinations before OC use, despite guidelines' recommendations indicating they are unnecessary and research suggesting they limit contraceptive use [24]. The small number of Jordanian women in current study who received baseline physical examination could be due to insurance obstacles or lack of knowledge regarding the importance of these examinations and laboratory monitoring.

Limitations of the study

The main limitation of this cross-sectional study is the use of a convenient non-random sampling approach with a larger sample size is needed. Although the questionnaire assessed Jordanian women's knowledge, attitude, awareness and

practice towards combined oral contraceptives (COCs) benefits and risks, but this study does not assess the reasons behind the lack of knowledge by most women regarding benefits and risk of COCs. Therefore, further consideration should be given to study the healthcare providers' knowledge, attitude, awareness and practice towards COCs benefits and risks. Finally, increasing the sample size would also lead to more comprehensive findings.

CONCLUSION

There is a lack of knowledge by most women regarding benefits and risks of COCs. They have negative attitude regarding the use of COCs for both contraception and non-contraceptive benefits. This lack of knowledge among them could be multifactorial; shortage in the educational programs conducted by medical and WHO centers, improper consultation from the physicians when prescribing COCs to patients, only few women seek advice or consultation from the pharmacists. Accordingly, educational programs provided by healthcare professionals can improve women's knowledge to maximize COCs benefits and minimize side effects. This study can be used as a benchmark for healthcare providers and decision makers in Jordan to produce educational programs in cooperation with clinical pharmacists aiming at improving women awareness regarding COCs use.

DECLARATIONS

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Conflict of interest

No conflict of interest is associated with this work

Contribution of authors

We declare that this work was done by Deema Jaber, Linda Tahaineh, Amal Akour and Abba Albsoul-Younes, and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. All authors have participated sufficiently in all different parts of this work including: conception and design, analysis and interpretation of data, drafting the article,

revising it critically for important intellectual content and final approval of the version to be published.

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