



## DETERMINANTS OF ANTI-MONEY LAUNDERING PROGRAM EFFECTIVENESS AMONG BANKS

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### ABSTRACT

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This study aims to examine the factors influencing the effectiveness of Anti-Money Laundering (AML) programs among bank employees, specifically the three factors of staff expertise, IT infrastructure, and rules and regulations. One hundred and fifty-two AML analysts participated in the questionnaire survey. The results show that staff expertise and rules and regulations have a significant positive influence on the effectiveness of an AML program while, conversely, IT infrastructure has a significant negative influence on an AML program in a company. The findings in this study indicate that banks may need to take strategic and proactive measures or policies to increase their staff's knowledge and understanding of their Anti-Money Laundering/ Counter Financing of Terrorism (AML/CFT) policies and procedures. The measures may include regularly reviewing and updating existing policies and procedures. Banks may also need to review their strategy in adapting newer technology related to AML programs. The findings in this study could provide an understanding to banks and other interested parties in recognizing the main factors that can contribute to improving their AML programs.

**Contribution/Originality:** This study is one of the few studies that have examined anti-money laundering programs using banks as the study setting.

### 1. INTRODUCTION

The increase in worldwide money laundering incidences has raised concerns about the need for more transparency and accountability among employees in both the public and private sectors. Money laundering activities include giving dirty money or property obtained from criminal activities, such as robbery or fraud, a legitimate appearance to make it look clean and to hide its true origin (Bank Negara Malaysia, 2014). Money laundering carries heavy penalties. In the US, a Washington bank was fined USD 100 million due to its failure to enforce anti-money laundering controls. Meanwhile, a bank in Amsterdam, Netherlands, admitted their accounts had been used by criminals to launder money and was fined Euros 775 million (Malaymail, 2018). In Singapore, the Monetary Authority of Singapore took a severe measure by shutting down a foreign bank and imposing fines on local banks that were involved in money laundering activities (Reuters, 2016).

In Malaysia, on 3 Dec 2015, it was reported that two men were charged for committing a crime under money laundering involving more than RM 1.5 million at CIMB Bank Berhad (Koris, 2015). On 14 Nov 2017, a director of a construction company was charged with money laundering involving RM 5.9 million, where the accused used three different company accounts in Malayan Banking Berhad, HSBC Bank Malaysia Berhad, and CIMB Islamic Bank Berhad for illegal transactions (The Star Online, 2017). In 2017, a businesswoman was charged for committing money laundering activities on 11 counts amounting to RM 671,450 (Malay Mail, 2017). The Malay Mail also reported that, along with an ex-manager and several businesswomen, a housewife was charged for her involvement in money laundering activity amounting to RM 90,000 in June 2016. The crime was reportedly committed through RHB Banks (Malay Mail, 2017). Considering these criminal activities, Bank Negara Malaysia (BNM) established a framework of AML/CFT. The framework's purpose is to provide measurements to prevent money laundering. The framework is intended to tackle growing money laundering and terrorist financing issues and to meet international standards of AML/CFT (Bank Negara Malaysia, 2014). BNM also collaborates with sixteen other agencies to combat money laundering (Bank Negara Malaysia, 2014).

Worldwide, banks are spending more to upgrade their AML systems and comply with requirements (Shanmugam & Thanasegaran, 2008). Banks are also planning to invest in implementing a more refined transaction monitoring methodology and adopting sophisticated IT systems rather than relying on staff vigilance, which has contributed to an increase in funding requirements. Arguably, this scenario is similar in Malaysia. Despite BNM highlighting the need for banks to carry out preventive measures, there is also substantial evidence of money laundering charges against individuals. Yet, some banks overlooked these individuals' transactions, indicating that there are still loopholes and some ineffectiveness in banks' efforts to efficiently sustain their AML systems.

Therefore, this study aims to examine the factors influencing the effectiveness of AML programs in banks. This study could be helpful to organizations and their staff to learn and understand more details about the factors that influence the effectiveness of AML programs in banks. The below section provides the literature review. Section three explains the research methodology, followed by section four that presents the results and discussion. The final section concludes this study.

## **2. LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES**

Money laundering is the processing of criminal proceeds to disguise their unlawful origin that often enables criminals to enjoy their profits without exposing their source of funds. There are three different stages in the process of money laundering, namely the placement, layering, and integration stages (Teichmann, 2017). These illegal activities can generate substantial proceeds and include illegal arms sales, smuggling, and organized crimes like drug trafficking and prostitution rings. Other activities, like bribery and computer fraud schemes, can also generate lucrative returns and create the encouragement to 'legitimize' fraudulent gains made through money laundering. When criminals generate a large amount of money, they need to find a way to hide the money without attracting attention. Usually, the criminals disguise the sources, change the forms, or move the funds to a place where they are less likely to attract attention.

To curb money laundering activities, the Financial Action Task Force (FATF) developed 40 recommendations in 1989 to set out the procedures for conducting anti-money laundering programs. While money laundering is the process of disguising dirty money to look like clean money, AML is an activity that prevents money laundering from happening (Yeandle, Mainelli, Berendt, & Healy, 2005). Nonetheless, AML procedures may vary depending on the jurisdiction. The aims of AML might involve detecting and deterring organized crime, reducing drug dealing activities, deterring terrorism, and maintaining the reputation of the financial services industry (Yeandle et al., 2005). Implementing AML requirements requires financial resources as the process can be tedious and costly. Criminals constantly come up with new ideas on how to launder money which forces regulators and banks to update, review, and continuously improve their policies and procedures (Choo, Amirrudin, Noruddin, & Othman, 2014; Huang,

Amirrudin, Noruddin, & Othman, 2013). An AML system could be considered effective if the benefits offset the costs incurred in combating the money laundering activities (Huang et al., 2013). However, it is also of concern to address the risk of human error. It may not be enough just to comply with the recommendations of the FATF to create an effective AML regime. To increase the regulation level further, it is important to evaluate the effectiveness of current AML requirements (Yeandle et al., 2005). It may be appropriate to perform an internal audit to determine the efficacy of money laundering awareness programs and compliance culture among an organizations' staff (Shanmugam, Nair, & Suganthi, 2003).

AML regulations relating to customer record-keeping, employee training, and reporting of suspicious transactions are effective in combatting money laundering and other frauds (Mugarura, 2011). However, these regulations have one drawback that weakens their impact; FATF regulations are not effective until and unless they are injected into the country's national law. This drawback results in poor enforcement between countries around the globe. Hence, the FATF regulations need to be enforced by tailoring the laws of the country and strictly enforcing fines and penalties (Kemal, 2014). A study mapped the requirements of the Committee of Sponsoring Organizations (COSO) and Control for Information and Related Technology (COBIT) into one framework, and the factors and objectives were observed (Prمود, Li, & Gao, 2012). The mapping concept is to allow the financial sector to coordinate IT and business activities in accordance with the regulations. The mapped structure can help banks block money laundering and, at the same time, efficiently run their daily business. With the aid of this framework, while adhering to local regulations, banks can now implement IT-based processes. These enable IT and financial services groups to make joint decisions on significant business activities. The process also lets banks track daily financial reporting services effectively, such as building Suspicious Activity Reports and Currency Transaction Reports SAR/CTR. The mapped system offers a fully regulated audit database for banks' IT and finance auditors allowing them to concentrate on records, transactions, and IT operations. However, many component processes require human involvement, which can impact the mapped framework's working effectiveness. Hence, it is necessary to identify the factors that may influence the effectiveness of an AML program. Three possible factors were selected for this study, namely staff expertise, IT infrastructure, and rules and regulations.

To maintain AML effectiveness, first, it is recommended that organizations employ and train workers with sufficient skills in and knowledge of money laundering. Previous studies have shown that staff competency is a significant factor in assessing money laundering activities, including the ability to identify impending risks in suspicious transaction reports (STRs). Staff, particularly frontline officers, are considered the 'first line of defense' in detecting money laundering activities as they often understand their customers well (Isa, Sanusi, Haniff, & Barnes, 2015). Hence, frontline bankers should be competent at detecting and assessing the risks associated with their customers and efficiently applying customer due diligence (CDD) processes. At this point, bankers can identify red flags related to money laundering or suspicious behavior presented by customers, and they need to be vigilant towards any imminent risk. The capabilities of bank officers could also be enhanced through training related to money laundering, and it should be mandatory for all staff to attend or complete this training and pass at a certain threshold (Isa et al., 2015).

One way to ensure staff competency is through adequate training procedures such as AML programs. Such programs include AML/CFT awareness, investigative skills, forensic accounting, and mutual legal assistance for criminal matters and asset forfeiture (Shanmugam & Thanasegaran, 2008). The selected programs must be adequate and continuous to develop employee knowledge and skills as well as behavior and lead them to become experts at combatting money laundering (Alldridge, 2008). Therefore, the first proposed hypothesis is:

*H1: Staff expertise influences the effectiveness of anti-money laundering programs.*

The second factor that may influence the effectiveness of an AML program is IT infrastructure serving as a tool to support risk assessment. Despite banks having sophisticated technology to assess money laundering activities, they still face a lack of skills in IT to support that technology and still depend heavily on the vigilance of their staff to

identify and monitor suspicious activities (Abdul Rahman, 2008). According to a study, staff who are not equipped with the necessary IT skills pose a risk to the management and incur costs (Isa et al., 2015). Having advanced IT infrastructure, however, also carries a high cost. The banks need to be financially capable of acquiring or developing their systems. Apart from IT infrastructure, the banks also need to allocate funds for staff training to efficiently use these systems and databases. It is crucial that staff is familiar with available systems as unfamiliarity could lead to money laundering risks being overlooked and undetected. Banks should be ready to invest in IT systems as a way to curb money laundering risk (Isa et al., 2015).

A study suggested that the adoption of IT systems would encourage a more transparent process (Vaithilingam & Nair, 2007). The study shows that IT infrastructure helps in enhancing anti-money laundering procedures. However, as well as advanced technology, banks need to ensure they also have supporting pillars, including the development of an independent and transparent institutional framework to foster greater integrity in preventing money laundering activities. The supporting pillars also need to be aligned and updated with technological advancements. Advanced AML technology is an effective method of identifying and tracing suspicious transactions, while traditional investigation techniques become ineffective or obsolete as new technologies are developed (Viritha, Mariappan, & Venkatachalapathy, 2015; Nazri, Zolkafil, & Omar, 2019). The use of intelligent agents (IA) technology is also recommended as the IAs can analyze all transactions and accounts (Gao, Xu, Wang, & Green, 2009). Hence, the second proposed hypothesis is:

*H2: IT infrastructure influences the effectiveness of anti-money laundering programs.*

The Malaysian government has undertaken numerous measures to combat money laundering, Monitoring and overseeing by regulators are required to deliver effective AML compliance within financial services (Naheem, 2015). Nonetheless, imposing these regulations may cause banks to feel threatened regarding their reputations, and they have the potential to get fined if they fail to adhere to the regulations. An anti-money laundering policy should not only stop the direct effect of the movement of capital but should also reduce the amount of crime (Ferwerda, 2009). Furthermore, internal control procedures play a major role in detecting or preventing money laundering operations (Jaara & Kadomi, 2017), which can be identified from the guidelines and policies set by commercial banks. Reporting institutions must also create a culture of compliance to ensure that the staff follows the banks' policies and procedures. As well as in-house, internal control procedures, banks should ensure the policies and procedures are relevant and in line with regulatory requirements. Along with guidelines from regulatory bodies and internal control, banks need to follow the forty recommendations set by the FATF in combating money laundering activities. Hence, the third proposed hypothesis is:

*H3: Rules and regulations influence the effectiveness of anti-money laundering programs.*

### **3. RESEARCH DESIGN**

#### *3.1. Sample Selection*

AML analysts applying transaction monitoring in banks were chosen as the sample for this study. These people manage the identification of suspicious transactions related to money laundering activities at the customer level; therefore, they were deemed suitable to provide input on the factors influencing the effectiveness of AML programs. Specifically, the sample was targeted at AML analysts doing transaction monitoring in banks. This study targeted 300 AML analysts as its respondents.

#### *3.2. Research Instrument and Data Collection*

This study used a questionnaire survey as its research instrument. The questionnaire had five sections: Section A requested the respondent assess their knowledge and skills on AML and give their feedback based on a 5-point scale ranging from '1' strongly disagree to '5' strongly agree. Section B comprised questions related to the importance of IT infrastructure in the company to combat money laundering and requested the respondents to give their feedback

on a 5-point scale ranging from '1' not important at all to '5' extremely important. Section C requested the respondent to recognize the importance of the AML policy and procedures in the company and requested them to give their feedback on a five-point scale ranging from '1' not important at all to '5' extremely important. Section D requested respondents to assess their understanding of the effectiveness of their company's AML system/ regime/ program and requested them to give their feedback on a five-point scale ranging from '1' strongly disagree to '5' strongly agree. The last section, Section E, covered general information from the respondents regarding their demographic profile like age, position, educational background, and working experience. The questionnaires were given to 300 AML analysts in banks throughout Malaysia using an online Google form. A hard copy of the questionnaire was also given to the respondents. One hundred and fifty-two analysts responded, resulting in a 50.7% response rate.

## 4. RESULTS AND DISCUSSION

### 4.1. Preliminary Analyses

This study performed the preliminary analyses prior to testing the research hypotheses. Table 1 shows the values of Cronbach's alpha for every factor (variable). The Cronbach's alpha for the AML program, staff expertise, and rules and regulations are 0.90, 0.90, and 0.92, respectively, while for IT infrastructure, it is 0.86. This result indicates that the items or statements used can reliably measure each variable (George & Mallery, 2010).

Table 1. Reliability of variables.

Variable name	Cronbach's Alpha	No. of items
AML program	0.90	8
Staff expertise	0.90	7
IT infrastructure	0.86	7
Rules and regulations	0.92	7

Table 2 shows the results of skewness and kurtosis for all variables are within the range of -1.504 to 1.983. This range implies that the mean scores for the AML program, staff expertise, IT infrastructure, and rules and regulations are normally distributed.

Table 2. Normality of variables.

Variables	Skewness	Kurtosis	Mean
AML system	-1.164	-0.031	4.7155
Staff expertise	-0.943	-0.437	4.6071
IT infrastructure	-0.752	0.079	4.4850
Rules and regulations	-1.504	1.983	4.7274

### 4.2. Descriptive Statistics

Table 3 presents the descriptive statistics showing the mean scores, which indicate the average score for each measure along with the standard deviations (SD) that measure the spread of the data from the mean. The results show that the item 'The bank files and reports an STR/SAR of suspicious transactions or customer behavior to the regulators/ FIU' has a mean of 4.80, which is the highest score. The means of the remaining items range from 4.58 to 4.78. The overall mean score for the AML program is 4.72, indicating the respondents agree that their company implements an effective AML program. Meanwhile, the highest standard deviation is 0.68 for the item 'The bank sends a report on cash transactions of USD 50,000 or equivalent and above.' The lowest standard deviation is 0.40 for item 'The bank files and reports an STR/SAR of suspicious transactions or suspicious customer behavior to the regulators/ FIU'.

Table 3. Descriptive statistics of AML programs.

Items	Mean	Std. Deviation
The bank conducts client identification (KYC/ CDD) procedures during on-boarding	4.78	0.48
The bank conducts procedures to meet record-keeping obligations, including type of document, responsibility for the maintenance of files, confidentially, type of information collected, and length of time each record is required to be kept	4.64	0.53
The bank sends a report on cash transactions of USD 50,000 or equivalent and above	4.67	0.68
The bank files and report an STR/SAR of suspicious transactions or suspicious customer behavior to the regulators/ FIU	4.80	0.40
The bank seriously monitors the transactions to be reported to the regulator/ FIU	4.72	0.51
There is a periodical assessment (ongoing due diligence) of customer information details	4.58	0.57
The bank is closely monitored by internal audit or regulators to ensure that the business activities are in-line with the internal policy and procedures as well as laws and regulations	4.76	0.43
There are sanction policy requirements that the bank needs to adhere to	4.76	0.46
All items	4.72	0.51

Table 4 presents the descriptive statistics, means, and standard deviations for all constructs of staff expertise. The means of the staff expertise items range from 4.43 to 4.70, in which the highest score is for item 'The bank provides training or guidance to employees on the identification of suspicious transactions activity.' The overall mean score for staff expertise is 4.61, indicating that the respondents slightly agree on their perceptions that staff expertise is required for an effective AML program.

Table 4. Descriptive statistics of staff expertise.

Items	Mean	Std. Deviation
The bank appoints a fit and proper compliance officer to manage and oversee the operation of the AML program	4.62	0.59
The bank allocates adequate resources, including staff and financial resources, to manage the AML program	4.43	0.77
The bank provides training or guidance to employees on the identification of suspicious transaction activities	4.70	0.49
The bank provides training or guidance to employees on the policies and procedures of anti-money laundering	4.67	0.53
The bank acquired the necessary knowledge and resources in the form of skilled employees to design an effective AML	4.53	0.76
The bank has its own anti-money laundering training modules, which it is mandatory for all levels of AML analysts and officers to complete	4.66	0.53
There are periodic classroom trainings or e-learnings that the staff need to complete	4.64	0.58
All items	4.61	0.61

Table 5. Descriptive statistics of IT infrastructure.

Items	Mean	Std. Deviation
The bank has acquired or developed IT systems or databases related to AML	4.34	0.81
The bank has better and more sophisticated IT infrastructure in detecting suspicious transactions	4.26	0.85
IT infrastructure such as customer information and case management and transaction alerts serve as a tool to support transaction monitoring assessments	4.51	0.62
A bank with a legacy IT infrastructure is vulnerable to potential money laundering activities	4.29	0.78
A bank needs to invest in updating its IT infrastructure to adapt to the current trends in money laundering activities	4.70	0.49
Staff need to be equipped with IT skills to use the AML software to analyze the information gathered from the systems	4.62	0.61
Unfamiliarity with IT infrastructure could leave money laundering risks undetected	4.67	0.55
All items	4.48	0.67

Table 5 presents the descriptive statistics for all constructs of IT infrastructure. All items surpassed the 4.00 mean, which indicates the respondents' agreement with the statements. The mean scores range from 4.26 to 4.70. The overall mean score for IT infrastructure is 4.48, implying that most of the respondents agree that IT infrastructure is crucial in achieving an effective AML program.

Table 6 presents the details of the descriptive statistics for all constructs of rules and regulations. The lowest mean score (4.58) for rules and regulations is recorded for item 'The AML policy and procedures are tailored to our bank's business and risks appetite,' whereas the highest mean score (4.79) is recorded for items 'I am aware of the implication of failure to comply with the rules and regulations set by the regulators/ authorities,' and 'The bank needs to meet the requirements set by the regulators in preventing money laundering activities.' The overall mean score is 4.73, implying that the majority of the respondents agree that rules and regulations are an important element in the effectiveness of the AML programs.

Table 6. Descriptive statistics of rules and regulations.

Items	Mean	Std. Deviation
The bank has internal AML policy and procedures in place	4.76	0.43
The AML policy and procedures are tailored to our bank's business and risks appetite	4.58	0.59
The AML policy and procedure are periodically reviewed to meet the evolving legal and regulatory obligations	4.72	0.48
The bank's policy and procedures are based on the AML regulation and guidance from, as such AMLATFPUAA 2001, FATF 40 recommendation policy document and guidelines from regulators, etc.	4.68	0.52
I am aware of the implication of failure to comply with the rules and regulations set by the regulators/ authorities	4.79	0.47
The bank needs to meet the requirements set by the regulators in preventing money laundering activities	4.79	0.47
Supervision by regulators on AML policy and procedures is vital to ensure effective implementation of anti-money laundering regimes in the bank	4.76	0.46
All items	4.73	0.49

#### 4.3. Correlation Analyses

A Pearson product-moment correlation was performed to determine the relationship between the variables AML program, staff expertise, IT infrastructure, and rules and regulations.

The results of the Pearson correlation shown in Table 7 suggest there is a statistically significant positive correlation between all the variables. AML program and staff expertise have a statistically significant correlation ( $r=0.738$ ,  $n = 76$ ,  $p = 0.000$ ), and there is also a positive correlation between AML program and IT infrastructure ( $r=0.553$ ,  $n = 76$ ,  $p = 0.000$ ).

There is a strong positive correlation between AML program and rules and regulations, which is statistically significant ( $r = 0.765$ ,  $n = 76$ ,  $p = 0.000$ ). Staff expertise is significantly related to IT infrastructure ( $r = 0.746$ ,  $n = 76$ ,  $p = 0.000$ ) and positively correlates with rules and regulations ( $r = 0.712$ ,  $n = 76$ ,  $p = 0.000$ ). IT infrastructure is significantly related to rules and regulations ( $r = 0.726$ ,  $n = 76$ ,  $p = 0.000$ ).

Table 7. Pearson's correlation analysis.

Variables	AML program	Staff expertise	IT infrastructure	Rules & regulations
AML Program	1.000	0.738 (0.000)	0.553 (0.000)	0.765 (0.000)
Staff Expertise		1.000	0.746 (0.000)	0.712 (0.000)
IT infrastructure			1.000	0.726 (0.000)
Rules and regulations				1.000

#### 4.4. Multiple Regression Analysis

The multiple regression analysis was conducted using the AML program as the dependent variable and staff expertise, IT infrastructure, and rules and regulations as the independent variables. Table 8 shows the R<sup>2</sup> results that indicate 68.5% of the variation in the AML program is explained by the variation of staff expertise, IT infrastructure, and rules and regulations.

Table 8. Multiple regression analysis.

Variables	Unstandardized coefficients beta	t - value	Significant
AML program	1.019	3.317	0.001
Staff expertise	0.409	4.769	0.000
IT infrastructure	-0.196	-2.323	0.023
Rules and regulations	0.569	5.660	0.000

Note: R square (R<sup>2</sup>) = 0.0685.  
F-value = 52.180.  
Significant = 0.000.

This study shows that staff expertise positively influences the effectiveness of the AML program and thus supports H1. This study also shows that rules and regulations positively influence AML program effectiveness and thus supports H3. Like H1 and H2, the hypothesis result for H3 reveals that rules and regulations positively influence the effectiveness of the AML program. However, this study shows that for H2, IT infrastructure has a significant negative influence on AML program effectiveness. This outcome indicates that having better IT infrastructure does not improve AML program effectiveness. One possible reason behind the finding is that technological advancement is growing at a fast pace, and the banks are not able to adapt to the changes in the system software used for AML programs.

## 5. CONCLUSION

This study aimed to identify the factors that contribute to the effectiveness of AML programs. Specifically, this study examined the effect of staff expertise, IT infrastructure, and rules and regulations on AML program effectiveness. The results of this study show that staff expertise does positively influence the effectiveness of the AML system (Subbotina, 2009). This finding implies that having staff who are experts in AML knowledge positively influences the effectiveness of AML programs. This study also provides evidence that rules and regulations positively influence the effectiveness of AML programs (Ferwerda, 2009).

However, this study provides evidence that IT infrastructure has a significant negative influence on the effectiveness of AML programs. This finding indicates that better IT infrastructure does not necessarily improve the effectiveness of AML programs. One possible reason behind the finding is that banks may not be able to adapt to the rapid changes in the system software used in AML programs. Therefore, banks need to further improve their IT structure to mitigate anti-money laundering activities. One suggestion is to adopt compliance software that has Artificial Intelligence features that fit the banks' operation that can help mitigate the risk of errors in keeping track and monitoring activities.

Banks may also want to take strategic measures to increase staff's knowledge on AML since this study shows rules and regulations significantly influence the effectiveness of AML programs. Apart from that, banks may hire experienced employees in AML as this may boost the effectiveness of their AML programs. Additionally, banks may enhance their AML/CFT policies and procedures through regular reviews and updating of the existing policies and procedures to ensure the requirements on AML/CFT are in line with the regulators' expectations. Although, based on this study, having an advanced IT infrastructure does not help to improve the effectiveness of AML programs, banks should still review their strategy in adapting to newer technology related to AML programs to help identify newer ways of actioning AML. Overall, the findings of the study provide evidence that staff expertise and rules and regulations positively influence the effectiveness of AML programs, while IT infrastructure negatively influences

AML programs. However, it is vital for banks to take AML seriously, as it can affect their financial wealth and that of the country as a whole (Petruk, Novak, Petruk, & Radchenko, 2021). By looking at this issue and improving IT infrastructure by adopting compliance software that has Artificial Intelligence that fits the banks' operation, financial losses due to AML can be mitigated. In addition, the seriousness of the banks in mitigating AML can guide their employees to be more alert and aware of any possible AML activities within their environment.

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**Authors' Contributions:** All authors contributed equally to the conception and design of the study.

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