ABSTRACT
The occurrence of coronary artery disease in females is growing owing to alteration in lifestyle. Furthermore, acute coronary syndrome will happen more through pregnancy when women delay pregnancy until older age. In recent years, many applications of intralipids have efficaciously examined its use in critically ill patients. Some reports demonstrated that using intralipid has important role in the heart protection in late pregnancy. This brief review will summarize some main information about pregnancy-related coronary heart disease and the role of intralipid in heart protection in late pregnancy. Based on reviewed literature, more trials are still essential to clarify the basic mechanism of intralipids regarding heart protection and any resulting new applications. As a result of the side effects of opiates, intravenous acetaminophen has been recently introduced for pain management, an issue that was previously controversial in clinical practice. We aim to explore its efficacy in acute pain control, pediatric and regional anesthesia.

KEYWORDS
Intralipid; Heart protection; Late Pregnancy.
toxicity. Other applications of intralipid such as ability in heart protection have also appeared in recent years. Moreover, this emulsion based therapy have been applied in other area such as in cancer therapy area or as treating unexplained recurrent spontaneous abortion [5, 8, 9, 12]. This review will summarize the available information about pregnancy-related coronary heart disease and also the role of intralipid in heart protection in late pregnancy.

Pregnancy-Related Coronary Heart Disease
According to WHO, nearly 99% of universal maternal deaths related to pregnancy problems happen in the low-income and middle-income countries [13]. Heart diseases as a major health problem, is reported to be 3-4 times more in pregnant women as compared with the non-pregnant women in the same age group. Some women won’t recognize they have bad heart situations until complications arise. Heart attacks are one of the major reasons of maternal death in the developing world. The occurrence of coronary artery disease in late pregnancy (LP) has increased in recent years triggering the introduction of new diagnostic and therapeutic modalities to ensure fetal and maternal safety [2, 6, 7]. Postpartum cardiomyopathy or peripartum cardiomyopathy is a rare form of heart failure that may happen in the last month of pregnancy. Its signs include tiredness, shortness of breath, swollen ankles, swollen neck veins, and feeling of missed heartbeats or palpitations. Pre-eclampsia is another problem affects up to six percent of women in LP. Its symptoms include high blood pressure as well as occurrence of protein in urine. Coronary artery dissection occurs when inner layers of a coronary artery tear away from the outer layer resulting in a heart attack. Eighty percent of patients suffering from coronary artery dissection are women, and 30 percent of them reported to be in LP [14]. The Role of Intralipid in Pregnancy
Reports shows that the occurrence of heart disease in LP has increased lately owing to some important changes in women’s lifestyle patterns. These reports have also revealed that myocardial infarction during LP and the peripartum is related to high maternal mortality and morbidity compared to non-pregnant women. There are some rare studies that have focused on the role of intralipid in heart protection in late pregnancy. However, some investigators have presented their study results in this regards. For example, Li et al proved that the heart of LP rodents is more prone to ischemia/reperfusion (I/R) injury compared to non-pregnant rodents. In their study, In-vivo female LP rat hearts or ex-vivo isolated Langendorff-perfused LP mouse hearts were subjected to ischemia followed by reperfusion. Their results showed that using intralipid significantly reduced the in-vivo myocardial infarct size in LP rats and also protected the LP hearts against I/R injury ex-vivo. According to authors, a specific inhibitor of STAT3 known as Static cause to intralipid-induced cardioprotection. Their analysis also showed that caveolin 2 (Cav2) was significantly upregulated by intralipid in hearts of LP rats under I/R injury. Their other experiments revealed that Cav2 interacts with STAT3. Then, intralipid protects the heart in LP against I/R injury by inhibiting the mPTP opening through Cav2/STAT3/ GSK-3β pathway [15]. The molecular mechanisms related to intralipid-induced cardioprotection in LP is not yet very clear. Li et al hypothesized that intralipid may protect the heart in LP by regulating the levels of specific microRNAs. They also verified that cardiac vulnerability to I/R injury extremely increases in LP rodents. This process leads to myocardial infarct size ~4 fold larger than in non-pregnant rodents. According to authors, administration of intralipid at reperfusion causes an infarct size reduction in LP rat subjected to I/R injury [16]. According to their MicroRNA-microarray analysis, the expression of miR122 was outstandingly upregulated more than 10 fold in the heart of LP rats in intralipid group compared to control group. Their analysis showed that miR122 regulates apoptosis in cardiomyocytes subjected to hypoxia/reoxygenation since miR122-overexpression resulted in reduced apoptosis, whereas knockdown of miR122 increased apoptosis. Data showed that Pyruvate kinase isoform M2 (PKM2) and caspase 3 are two targets of miR122 since the expression of PKM2 and caspase-3 in the heats subjected to I/R was meaningfully lower in intralipid group compared to control group in LP [16].

CONCLUSION
Intralipids as a source of calories have been used for years, however, there are rare reports about rescuing effects in heart disease and the role of intralipid in heart protection in late pregnancy. Therefore, more trials are vital to explain the basic mechanism of intralipid concerning to heart protection and subsequent novel applications.

CONFLICT OF INTEREST
The author declares no conflict of interest.

REFERENCES


