

Group	Pain Score			
	0	1	2	3
A (n=54)	45(84)	4(7)	4(7)	1(2)
B (n=54)	2(4)	5(10)	24(44)	23(43)
p-Value	P<0.001	P>0.05	P<0.001	P<0.001

Table 4 : Different grades of pain score at 2 minute

The overall incidence of pain in the group at two minute was 96%, compared with 16% in the ketamine group ($p<0.001$). One patient in the patient in the ketamine group experienced severe pain as compared to 23 patients in the saline group ($p<0.001$). The number of patients who experienced mild to moderate pain was 29(54%) and 8(14%) in the saline and ketamine group respectively.

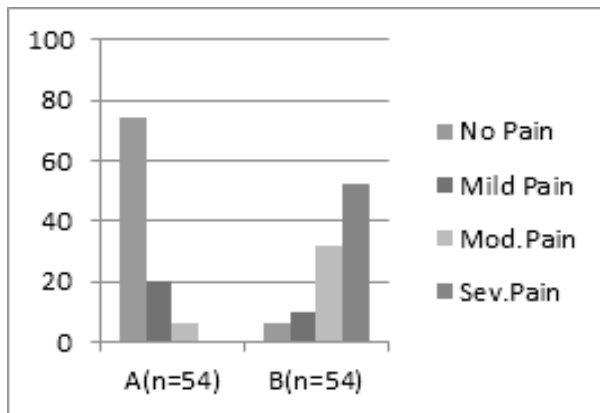


Fig 1: Different grades of pain at 0 minute in different groups

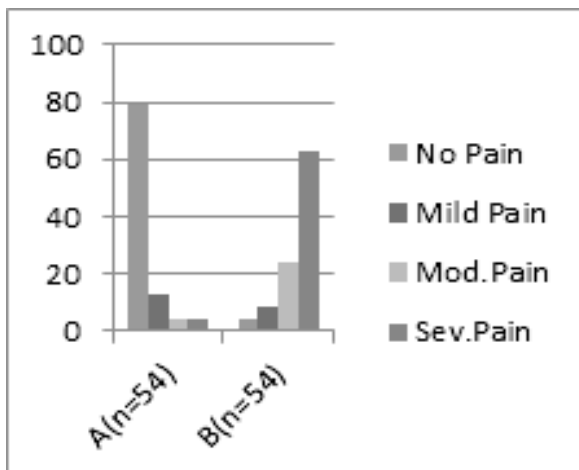


Fig 2: Different Grades of Pain at 1min in different groups

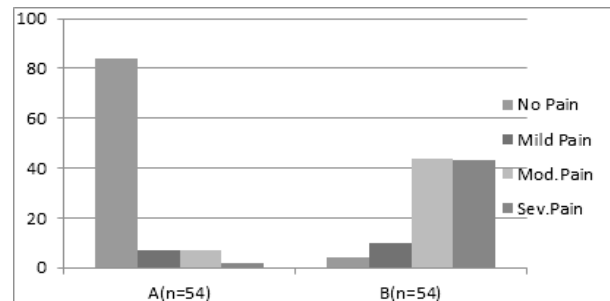


Fig 3: Different grades of Pain at 2 minute in different groups

Discussion:

As an innovation of anaesthesia, propofol has now been widely used due to rapid action and short functioning time. However, it mainly suffers from injection pain¹⁹, as an inevitable issue of which patients are afraid²⁰. With elusive mechanisms, the injection pain of propofol has mainly been attributed to the pain-inducing effect originating from the contact between aqueous phase of emulsion and free nerve endings²¹ or the delaying effect based on bradykinin produced by the activated kinin cascade system.²² Bradykinin leads to local phlebotasia and increases vascular wall permeability, so propofol can penetrate the vascular to contact with more free nerve ending, thus aggravating the injection pain.²³

Multiple pharmacological and physical approaches have been used to decrease propofol injection pain. These attempts includes use of largers veins^{4,5,6,7}, decreasing speed of injection ,injection of drug into a fast intravenous fluid^{7,2,1}, diluting it with 5%glucose or 10% intralipid⁶, mixing lidocaine with propofol¹⁸, venous occlusion²², pretreating with alfentanil^{14,23}, meperidine, cooling to 4 degree celcius, injecting cold saline 4% before propofol injection^{24,25} and preparation of skin with nitroglycerine oinment¹⁷. Most of the drug studied for used as pretreatment to attenuate propofol injection pain do not offer any satisfactory result so we decided to study ketamine.