

## **ELECTIVE (SSC5c) REPORT (1200 words)**

A report that addresses the above four objectives should be written below. Your Elective supervisor will assess this.

### **Prevalence of chronic pain in Singapore, and how does it compare to the UK?**

Chronic pain is defined as, 'pain that persists for longer than 3 to 6 months, or the "normal healing" time of an injury' (1). Pain itself is defined as 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage' (2).

Together, these two definitions allude to a poorer quality of life in patients with chronic pain. A 2012 report by the Health & Social Care Information Centre (HSCI) in the UK found that chronic pain is associated with several negative outcomes, including depression, unemployment and an impaired ability to perform daily activities (2).

In addition to the negative effects on patients with chronic pain, chronic pain also has negative outcomes on the economy, with chronic back pain estimated to cost the UK economy £12.3 billion per year (2).

Pertinently, the UK report highlighted the depth of research that has gone into discovering epidemiological trends related to chronic pain in the UK, and the socioeconomic consequences of these statistics.

With regard to prevalence- more women than men reported chronic pain (37% compared to 31%) (2). The prevalence of chronic pain also increased with age, as less than a 20% of those between 16-34 reported chronic pain, while more than half of those aged 75 and over reported chronic pain (2). From a socioeconomic perspective, it was found that individuals from the lowest income groups were the most likely to report having chronic pain (40% of men and 44% of women compared with 24% of men and 30% of women respectively) (2).

In contrast, until a 2009 study by Yeo and Tay, few studies on the prevalence of chronic pain had been done in Singapore (3). Their study found that there was a prevalence rate of 8.7% in Singapore (3). They also found that the prevalence of chronic pain increased with age, reaching 19.7% in those above 65 years of age, compared to 5% in those under 35 years (3). They also found that there was a higher prevalence of chronic pain in the lower monthly household income groups, with 18.2% of those earning less than \$1000 per month reporting chronic pain, compared to 6.2% in the group earning \$8000 or more (3).

The results of these two studies on the prevalence of chronic pain show similar trends in the UK and Singapore, namely that chronic pain increases with age, and is also more prevalent in lower income groups. However, the studies also show that in the prevalence of chronic pain is greater in the UK than in Singapore. Yeo and Tay postulate that genetics and cultural differences may be factors in these differences (3).

**Describe the management of chronic pain in Singapore compared to the UK.**

In the UK, chronic pain is first managed at the GP level. GPs are able to prescribe painkillers and provide several other management options before referral to a hospital pain clinic. These options include self-help courses, to help patients better manage their condition, and counselling sessions. There are also pain management programmes, where groups of patients are taught to cope with their pain (4).

Chronic pain resulting in severe impairment of normal daily activities can lead to referral to a hospital pain clinic. Pain clinics are multi-disciplinary in nature and offer several types of treatment, including medication, injections, hypnotherapy and acupuncture. As the NHS is a single-payer system, free at the point of need, treatment at pain clinics is only available upon referral by a patient's GP or hospital consultant (4).

In contrast, Singapore has adopted a mixed-financing system, with the Government providing some subsidy to a patient's healthcare costs. Government hospitals, such as SGH, are also able to provide private services. Thus, pain clinics are available to both public and private patients. Public patients are able to access these clinics upon referral by polyclinic GPs (government-run GP practices) or by hospital consultants, and pay subsidised rates. Private patients can access these pain centres either by walk-in appointments or from private GP referrals.

Pain clinics, such as the SGH Pain Management Centre, function similarly to the NHS pain clinics, providing patients with multi-disciplinary approaches to chronic pain. The centre is staffed with pain specialists, nurses, physiotherapists and psychologists. Treatments include medications, injections and acupuncture (5).

**Discuss the different induction agents used in anaesthesia.**

The ideal induction agent in anaesthesia would be predictable, have rapid onset and offset, cause minimal haemodynamic changes, have no side effects, and suppress airway reflexes to aid intubation. It would also be painless when given intravenously (IV), non-irritable if inhaled, and be cheap and stable at room temperature (6).

Induction agents can be classified into IV or inhalational agents. Propofol and etomidate are common IV induction agents, while sevoflurane is commonly used for inhalational inductions (6).

Propofol is a commonly used induction agent as it is a rapid-acting IV hypnotic, with faster recovery than thiopental. It is also able to produce different levels of consciousness, from light sedation to induction and maintenance of general anaesthesia (7). It also has anti-emetic effects. Propofol works by potentiating GABA receptor binding, and by inhibiting Ach release in the prefrontal cortex and hippocampus (7). It also causes respiratory depression and decreases blood pressure, myocardial depression, more markedly in elderly patients (7). Side effects include pain on injection, which can be minimised by co-administration with lidocaine. There is also a chance of anaphylaxis due to soybeans and egg yolk being present in the propofol emulsion (7). Propofol infusion syndrome is a rare, serious complication characterized by metabolic acidosis, rhabdomyolysis and arrhythmias (7). This occurs in critically ill patients, and in those who have been under long-term anaesthesia for more than 48 hours (7).

Etomidate is another IV induction agent, which is rapid acting and haemodynamically stable (in contrast to propofol) (7). Etomidate's mechanism is by potentiating GABA binding to its receptor (7). However, it may result in extrapyramidal motor symptoms, cause seizures, headaches, nausea and vomiting. Etomidate also causes adrenocortical suppression, by inhibiting 11 $\beta$ -hydroxylase, and local thrombophlebitis (7).

Sevoflurane is an inhalational agent which is a volatile liquid, easily vaporized for inhalation (6). Sevoflurane is a halogenated ether which is well-tolerated as it is non-pungent, hence its use in paediatric surgery). It also has a low blood:gas solubility, thus facilitating quick recovery. It is a bronchodilator and respiratory depressant (7).

Improve technique of anaesthetic clinical skills and gain better understanding of pre/intra/post-operative care.

In this placement, I have had the opportunity to practice several clinical skills, such as;

- drawing up of drugs
- peripheral IV cannulation
- mask ventilation
- laryngoscopy
- intubation with laryngeal mask airways (LMAs)
- intubation with endotracheal tubes (ETTs)

I also attended pre-operative assessments, and was given teaching on intra-operative and post-operative monitoring of patients. This included instruction on the various parameters being monitored during surgery, their significance, and how to adjust them to ensure the smooth running of the surgery.

## References

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3. Yeo SN, Tay KH. Pain prevalence in Singapore. Ann Acad Med Singapore. 2009;38(11):937-42.
4. Choices N. How to get NHS help for your pain 2014 [updated 23/6/14; cited 2015 26/4].

5. Hospital SG. Pain Management Centre 2014 [updated 5/8/14; cited 2015 26/4]. Available from: <http://www.sgh.com.sg/Clinical-Departments-Centers/Pain-Management-Centre/Pages/pain-management-centre.aspx>.
6. Collier J, Longmore M, Turmezei T, Mafi AR. Oxford Handbook of Clinical Specialties. 8 ed. UK: Oxford University Press; 2009.
7. Gupta A, Singh-Radcliff N. Pharmacology in Anaesthesia Practice. UK: Oxford University Press; 2013.