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Table of Contents

ABSTRACTS OF THE 13th MPS PHARMACY SCIENTIFIC CONFERENCE 2017

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50 & Fabulous: Looking back on the journey, embracing the future
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Editorial

50 & Fabulous: Looking back on the journey, embracing the future

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"What is past is prologue." The famous quote by Shakespeare reminds that, one should study the past in order to best anticipate and be prepared for the future. As a frontline pharmacist, we should constantly ask ourselves a few questions: What are the characteristics of the *past* we should honor? What can we learn from the *present?* What parts of the *future* should we embrace? By embarking on a career in pharmacy, each of us has joined an ancient and honourable profession that deals with the latest, up-to-date technological advances for the benefit of mankind.

First, let's examine the past. Pharmacy service was officially established in Malaysia since 1951 with implementation of the Registration of Pharmacist Act 1951, Poisons Act 1952 and Dangerous Drugs Act 1952.[1] Malaysian Pharmaceutical Society was subsequently formed and registered with the Registrar of Societies on 6th Nov 1967.[2] Due to the shortage of pharmacist in the country, compulsory service was introduced in the public sector in 2003 which was later enforced in 2nd September 2004 through the amendment to the regulations of the Registration of Pharmacists Act 1951.[3] Pharmacy – the science and technique of preparing and dispensing drugs and medicines, has undergone transformation over the years, evolving itself from a product-oriented to a patient-oriented profession by the mid 1960s. In the 1990's, the concept of Pharmaceutical Care was introduced by Helper and Strand. The touchstone of this approach was that, pharmacist should accept responsibility in assisting patients to obtain the very best outcomes from their use of medications. This marked the beginning of a period of rapid transition onto clinical pharmacy services that was characterized by an expansion and integration of professional functions, as well as increased professional diversity and closer interaction with physicians and other health care professionals.

The present - On the brink of another major milestone, the streamlining and integration of modern technology allows improved workflow for pharmacists practicing in various settings including community, hospital, industry, academia and others. Regardless of the site of practice, taking a patient centred approach to optimise medication should be priority. For examples, in industrial pharmacy, the manufacture, regulation, and promotion of medicines is targeted on improving patient safety. The introduction of new pharmacy services, including the initiation of smoking cessation services and various Medication Therapy Adherence Clinics (MTAC) by the Pharmaceutical Services Division, Ministry of Health Malaysia across nationwide ambulatory settings is a proof that pharmacists are able to work in collaboration with other healthcare professionals. These services are beneficial in preventing and managing ill-health among general population and also among special populations such as older person and patients with complex needs through the optimisation of the medication management.

Next, the future. In view of the rising trends of non-communicable diseases, antibiotic resistance and growing baby boomers across the globe, there is a need for astute strategic planning for pharmacist to work in collaboration across settings. In addition, we should recognize our strength as a group and provide services valued by the public and other healthcare professionals. Contemporary and future pharmacists must possess specific knowledge, attitudes, skills, and behaviours in support of their roles through continuous education. Pharmacist certification could be implemented through a coordinated national certification board. We should prepare ourselves to transform and maximize technological

advances and progress toward digital pharma, telepharmacy, gene based therapy and individualized medicine.

In summation, transformation in the pharmacy workforce over the coming years should focus on patients as the center of all the pharmacists do, by promoting proactive, compassionate pharmaceutical care and encouraging professionals, services and organizations to work together.

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EXPLORATION OF EQ-5D-5L BOLT-ON ITEMS AMONG MALAYSIAN POPULATION

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ABSTRACT
This study aimed to assess the adequacy of EQ-5D-5L in defining health as perceived by Malaysians using a mixed methodology approach. Potential additional dimensions (i.e. bolt-on items) to supplement the current instrument were also explored. This study was carried out in two phases. In phase one, focus group discussions (N = 6-8 in each group) were employed to gauge the perception of Malaysians on the dimensions deemed important additions to the EQ-5D-5L instrument. Phase two involved further validation of bolt-ons to the EQ-5D-5L using a cross-sectional survey of 100 general public in Penang, Malaysia. A total of 11 bolt-ons were identified from phase 1. These bolt-ons were sleep, vitality, happiness, close relationships, stress, mental abilities, social support, religion, vision, hearing, and speaking. In phase 2, the bolt-ons of 'vitality' and 'stress' stood out with 70% (n=70) and 64% (n=64) participants reported facing most problems with, respectively. Both phases of study suggest that additional dimensions for the existing EQ-5D-5L instrument may be useful to better capture the HRQoL among Malaysians. Larger scale study is warranted to further validate the bolt-ons identified in this study.
Keywords: Health-related quality of life, EQ-5D-5L, bolt-on, health dimensions

INTRODUCTION
Health-related quality of life (HRQoL) instruments offer a way to measure patient-reported outcomes in addition to existing clinical indicators for a more wholesome assessment of a person's well-being (1). Currently, these instruments are widely applied in economic valuations, besides quantifying the effectiveness of medical treatments, and monitoring patients' medical progress (2).

One of the most commonly used generic HRQoL measures is the EuroQol five-dimensional questionnaire (EQ-5D). The EQ-5D instrument comprises five dimensions, namely mobility, self-care, usual activities, pain/ discomfort and anxiety/depression (3). The EQ visual analogue scale (EQ-VAS) usually accompanies the 5 earlier questions and measures general health on a thermometer-like scale from 0 (worst possible health imaginable) to 100 (best possible health imaginable) (4). Designed with simplicity in mind, the original EQ-5D has three levels (known as EQ-5D-3L) of severity ranging from 'no problem' to 'unable to' perform a specific task. However, having suffered from ceiling effects (5, 6), a newer version with five levels of severity (EQ-5D-5L) has been introduced since 2009 (7).

In tandem with the growth of health technology assessment in Malaysia, the application of the EQ-5D-5L instrument has been increasingly utilised in the country (8). Importantly, the concept and application of HRQoL, being subjective in nature, has shown to be influenced by both culture and socioeconomic status (9, 10), and these differences may extend between the context of Malaysia and the European countries in which the instrument was originally developed. A recent study (11) conducted on the data of 51 countries of the World Values Survey indicated that self-reported health is indeed associated with cultural values that differ between countries. Therefore, the dimensions included in the EQ-5D-5L instrument, which was developed and catered to the European population, may not truly reflect how Asians choose to define health.

Having a HRQoL tool that fits the need of the local population would mean that the scope of dimensions chosen reflects the definition of health as a population. HRQoL tools that functions alternatively as preference-based measures, such as the EQ-5D-5L can be used to generate health utilities. These health utilities sum up the values of the dimensions to quantify the value of health. Consequently, patient-reported outcome measures (PROM), including the EQ-5D-5L must quantify health with only a selected number of health dimensions before becoming too burdensome on respondents. The choice of HRQoL dimensions to include in an instrument has far reaching implications, especially when used in economic evaluations. Health utilities that fail to reflect the true health concerns of a population will not be effective as outcome variables in quantifying or comparing benefits of different treatment approaches.

In the initial stages of development, the interpretation and perception of the five health dimensions of EQ-5D-5L instrument were tested qualitatively in focus groups in different European populations (12),

signifying that the dimensions chosen are suitable for the European populations. To date, there is no qualitative study done to determine how Asian populations (including Malaysians), perceive the dimensions of the EQ-5D-5L instrument and whether the scope of HRQoL fits the need of the local population.

Therefore, assessing the perception of Malaysians about the use of EQ-5D-5L will be timely to guide the application of this instrument. Furthermore, exploring additional dimensions (commonly known as bolt-ons) (13) that can supplement the EQ-5D-5L instrument will be useful to better capture the HRQoL needs of the Malaysian population. This study aimed to assess the adequacy of the EQ-5D-5L in defining health as perceived by Malaysians using a mixed methodology approach. Specifically, a qualitative approach was applied to study the perception of Malaysians on the EQ-5D-5L and EQ-VAS in describing the HRQoL and to explore potential bolt-ons to complement the existing EQ-5D-5L instrument and subsequently, a quantitative approach was used to explore the suitability of the bolt-ons.

METHODS

This study was divided into two phases. Focus group discussions were held in the first phase with the aims to gauge the perception and understanding of Malaysian population on the original EQ-5D-5L instrument and subsequently, to explore additional dimension(s) (if any) to strengthen the instrument. In the second phase, the effects of bolt-ons (based on findings in phase 1) to the EQ-5D-5L descriptive instrument were further studied. Ethics approval has been granted by the Malaysia Medical Research & Ethics Committee (ID NMRR-13-1377-18574).

Study Population and Setting

In phase 1, focus groups comprised of 6 to 8 participants each, were conducted. The inclusion criteria for participant recruitment were Malaysians aged between 30 and 50 years who were able to converse in Malay or English. Participants were recruited via purposive sampling to ensure that the final cohort had a healthy mix of different gender, ethnicity and age, whilst adhering to the inclusion criteria and written consents were also obtained. The focus groups were held in Universiti Sains Malaysia, Penang. A semi-structured interview guide was used in the discussion and the number of focus groups conducted was determined by data saturation. Topics of discussion included understanding of the five dimensions in the EQ-5D-5L, factors influencing the EQ-VAS scores, and any other aspects perceived to affect their definition of health and HRQoL. Both sessions were conducted in a mix of the Malay and English languages to facilitate delivery of ideas where participants were informed that they could speak their preferred language and each session was audio recorded.

Phase 2 of the study was a cross-sectional survey that involved 100 conveniently sampled general public. Malaysians aged 18 years and above, and were able to speak or write in Malay or English were recruited. The questionnaire was self-completed by the respondents and assistance was provided when clarification was required. The questionnaire consisted of five parts, namely socio-demographic information, self-reported health using EQ-5D-5L descriptive instrument, bolt-ons structured in the same manner as the EQ-5D-5L descriptive instrument (identified from Phase 1) (APPENDIX 1), EQ visual analogue scale (EQ-VAS), and the ease of understanding of the EQ-5D-5L and bolt-ons using a 5-point Likert type scale (1= very easy to understand, 5= very difficult to understand) (as shown in Appendix). The questionnaire was available in both Malay and English languages.

Data Analysis

The focus group audio recordings were independently transcribed verbatim by two researchers and crosschecked for inconsistency. The finalized transcriptions were analysed for emergent themes using the framework approach, as described elsewhere (14). Basically, the framework approach involves systematically summarizing the data of the transcript into a framework matrix to facilitate clear interpretation of underlying themes or concepts. All co-investigators were involved in discussing to reach a consensus on themes, codes, and representative quotes.

Descriptive analysis was applied in phase 2. The frequencies and percentages of all variables, together with mean and standard deviation of continuous variables were presented in table forms. Chi-square test was used to test the relationship between various categorical socio-demographic variables and the ease of understanding of each dimension, Fisher's Exact Probability Test for 2 x 2 tables with frequencies less than 10, while Mann-Whitney test was applied for continuous variables. The ease of understanding responses of each dimension was grouped into two, those who answered "very easy" or

"easy" and those who answered "moderate" or higher. Data were analysed using SPSS Statistics version 22 (IBM, Illinois) and *p*-value of < 0.05 was considered statistically significant.

RESULTS

Phase 1: Focus Group Discussions

Data saturation was reached after two intensive discussion sessions. The recruited participants comprised a mix of the major races in the Malaysian population i.e. Malay, Chinese, and Indian (Table 1). Each focus group lasted for about one and a half hour. Opinions expressed in Malay were later translated to English and face validated by a native speaker investigator prior to data analysis.
Three themes were identified in phase 1:

i) Understanding about EQ-5D-5L

Generally, the participants found all five dimensions in EQ-5D-5L were easy to comprehend. The mobility dimension was generally interpreted as only walking abilities as stated in the severity descriptions of the dimension in the instrument,
"Looking from the statements, it is already written here problems with walking, so I presume that mobility (dimension) refers to walking. So, I am answering the question based on the word 'walking' (abilities) and not the general word of mobility." (Female, 31, Chinese)

Table 1: Phase 1 study sample characteristics (n=14)

Variables	n	%
Age (years), mean (SD), range		39.1 (7.4), (30-49)
Number of participants		
Focus group One	8	57.1
Focus group Two	6	42.9
Gender		
Male	7	50.0
Female	7	50.0
Ethnicity		
Malay	5	35.7
Chinese	5	35.7
Indian	4	28.6
Religion		
Muslim	6	42.9
Buddhist	2	14.3
Hindu	3	21.4
None/ did not disclose	3	21.4
Education Level		
Secondary school	5	35.7
Matriculation/ STPM/ Diploma	1	7.1
College/ University	8	57.1
Employment Status		
Employed	10	71.4
House caretaker	2	14.3
Retired	2	14.3
Marital Status		
Married	13	92.9
Widowed	1	7.1
Household Income		
Less or equal to RM 1,500	4	28.5
RM 1,501 - RM 3,000	5	35.7
RM 3,001 - RM 4,500	1	7.1
RM 4,501 - RM 6,000	1	7.1
RM 6,001 - RM 7,500	3	21.4

The self-care dimension was interpreted by most respondents as the ability to carry out one's basic and daily activities,

"To me, the second dimension (self-care) describes the ability of a person to care for himself. That is what I understand. Whether a person is able to perform his daily activities independently or whether he needs assistance or not in terms of bathing, wearing clothes, cleaning…" (Male, 33, Malay)

Participants perceived the usual activities dimension as their daily routines,

"Usual activities are things such as going to and coming back from work. Seems like that. Activities that we usually perform daily." (Male, 32, Malay)

Comparatively, more respondents were facing problems themselves in the dimension of pain/discomfort and anxiety/depression and therefore were explaining their own experiences in facing those health issues. The pain/ discomfort dimension was perceived to encompass either physical discomforts or pains,

"The (dimension) that is having pain, a slight pain. I just twisted my back because of hiking or something else. I'm not too sure. Yeah, so I have got some slight discomfort." (Male, 48, Chinese)

Nearly all participants associated anxiety/depression dimension as having the feeling of worry due to stressful life events,

"…my son just coming home from hospital (after a dengue infection). He is going to sit for an exam tomorrow. So, I am worried about his health. He is not fit yet. So I am just worried and then Deepavali is around the corner. So with all this, I am a housewife and I am also working, so the (whole thing) is stressful." (Female, 48, Indian)

ii) Factors influencing the score of EQ-VAS

One of the key factors affecting the rating of EQ-VAS was the existing environmental problem,

"I score 50 for today because of the haze and cough. As for the kids, they will also be having the cough causing their health to become worse." (Male, 33, Indian)

"I scored 70 because of the terrible haze last week. Everything is related to haze. For example, when I wanted to do some outdoor activities, like playing ball in the open air, the breathing is badly affected. It's bad." (Male, 32, Malay)

Whilst some of the participants rated their EQ-VAS score based on measurable HRQoL factors such as obtaining sufficient sleep or having physical pains after vigorous sports, others chose to rate their health based on being able complete unfinished business or spend quality time with family,

"I rate my scale as 85 because we had Eid holidays and I was able to spend a lot of quality time with my child and wife." (Male, 32, Malay)

iii) The concept and dimensions of 'health'

The participants were asked to define "health" and discuss about various aspects affecting their health. Interestingly, the majority of the participants emphasized on the importance of the mental and social aspects in defining good health,

"If you're mentally not healthy, then you will easily commit suicide, and you will still not be in a complete health state. In terms of social, we need to interact with people. Only we interact with people then we share our problems, (receive) encouragement from peers. That definitely will help to build the more complete health state. So I think both elements (mental and social) are important." (Female, 33, Chinese)

Besides, there were others who stressed upon the spiritual aspect in affecting people's health,

"Okay, to me, an individual has to be healthy from the inside, spiritually. Viewing from a Muslim perspective, when we pray or read the Quran, so, the inner self will reflect our outer self. Being loyal to God will allow us to be healthier and calmer." (Male, 33, Malay)

'Sleep' was also commonly deemed as an important dimension to influence health, with participants sharing their experience of developing chronic diseases and nervous breakdowns as a result of lacking sleep,

"I put sleep as number one because if you don't get enough sleep, the disease will just break in. Hypertension, heart attack... And all this start from the sleep, don't have enough rest and even with a little bit of tension you cannot handle because the brain is too tired." (Female, 48, Indian)

The feeling of stress, especially due to the workload and uncompleted tasks was prevalent among some participants. The stress often affects health in a negative way,

"Feeling unhealthy because of stressing up with work...Or anything else that you have unfinished business. Then you feel unhappy with the thing until you complete it or at least attempt to complete it." (Male, 36, Indian)

Social support was perceived by a number of participants as another influential factor affecting health as it helps people overcome the stresses of daily living,

"... and social support has to be there to support everybody to take through their daily living so if you can't do daily living properly, then you are going to get stressed and back to the same circle certainly." (Male, 36, Indian)

Factors that have been deemed important to influence HRQoL by two or more participants were then considered as bolt-ons. In total, 11 bolt-ons were identified include sleeping, social support, vitality, happiness, close relationships, stress, mental abilities, religion, vision, hearing, and speaking. These were further tested in phase 2.

Phase 2: Bolt-On Survey

The demographics of the 100 participants are shown in Table 2. 95% of the survey participants claimed that their comprehension level of the EQ-5D-5L descriptive instrument with bolt-ons ranged between 1 (very easy to understand) to 2 (easy) of the 5-point Likert scale, and no one reported a comprehension level of higher than 3 (moderate).

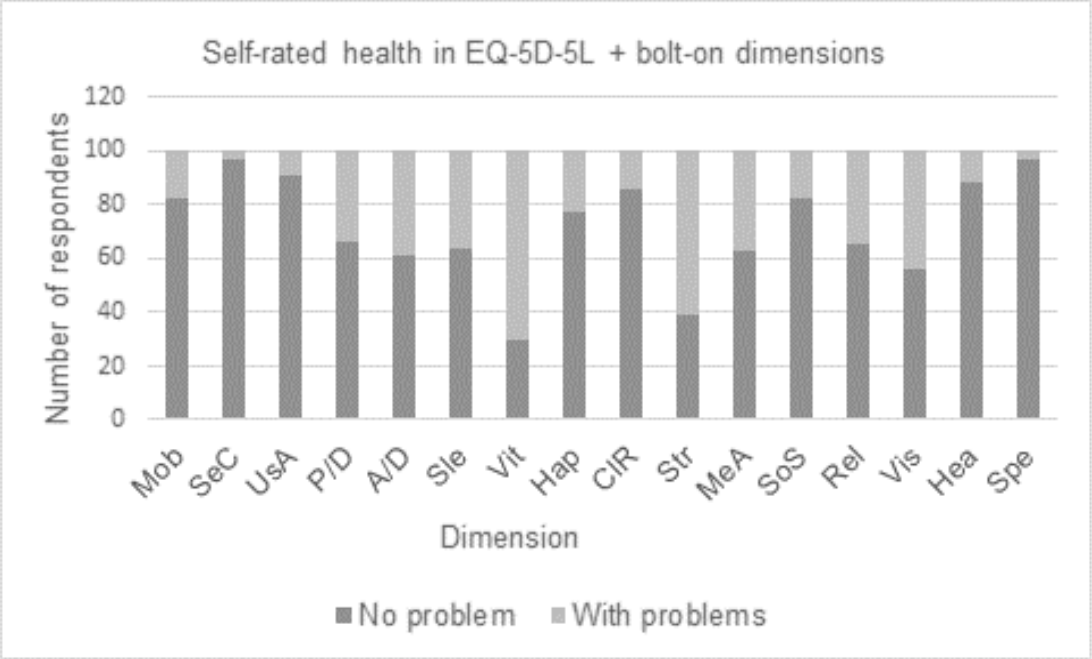
In general, responses of moderate on the bolt-on descriptive instrument tended to come from those whose highest educational qualification was pre-university level (matriculation/STPM/diploma), male gender. No obvious trend was observed for age, marital status, income, and household number. However, no statistical significance was reached on the test of associations on all the bolt-on dimensions. In the original EQ-5D-5L dimensions, similar trends were observed, and none of the sociodemographic variables were statistically associated to the responses, except gender where only males reported moderate ease of comprehension.

Table 2: Phase 2 study sample characteristics (n=100)		
Variables		**n**
Language		
	Malay	70
	English	30
Gender		
	Male	41
	Female	59
Ethnicity		
	Malay	59
	Chinese	19
	Indian	17
	Others	5
Age (years), mean (SD), range		30.4 (11.4), (19-80)
Current health status		
	Excellent	8
	Very Good	22
	Good	55
	Fair	15
	Poor	0
Education Level		
	No formal education	1
	Secondary school	7
	Matriculation/ STPM/ Diploma	66
	Bachelor's degree	19
	Postgraduate's degree	7
Employment Status		
	Employed	63
	House caretaker	2
	Student	27
	Unemployed	7
Marital Status		
	Never married	59
	Married	40
	Divorced/Separated	0
	Widowed	1
Household Number, mean (SD)		4.2
Household Income		
	Less than RM 1,500	14
	RM 1,500 - RM 3,000	29
	RM 3,001 - RM 4,500	24
	RM 4,501 - RM 6,000	14
	RM 6,001 - RM 7,500	6
	Above 7,500	13
Time to complete survey (min), mean (SD)		6.9 (2.8)
EQVAS Score (1-100), mean (SD), range		84.0 (11.2), (40-100)

Note: The figures (n) also reflect the percentage, % as there are a total of 100 participants.

In assessing their self-reported on the pain/discomfort dimension health problem on the EQ-5D-5L descriptive instrument, the majority of participants reported facing no problems in the five original health dimensions (Figure 1). Of the 5 dimensions, the highest self-reported problems (ranging from slight problems to extreme problems) were associated with anxiety/depression (39%) and pain/discomfort (34%). Comparatively, of the bolt-ons, two particular dimensions, i.e. vitality (70%) and stress (61%) denoted most significant amount of self-reported problems among the 100 participants.

Figure 1. Self-rated health in EQ-5D-5L with bolt-ons



Abbreviated dimensions: 'Mob'= mobility; 'SeC'= self-care; 'UsA'= usual activities; 'P/D'= pain/discomfort; 'A/D'= anxiety/depression; 'Sle'= sleep; 'Vit'= vitality; 'Hap'= happiness; 'CIR'= close relationships; 'Str'= stress; 'MeA'= mental abilities; 'SoS'= social support'; 'Rel'= religion; 'Vis'= Vision; 'Hea'= Hearing; 'Spe'= Speaking; First five dimensions from the left denotes the original EQ-5D-5L dimensions

DISCUSSION

Overall, all participants showed good understanding of the individual 5 dimensions in EQ-5D-5L in both phase 1 and 2. The simple way the original EQ-5D-5L dimensions were worded was used as a basis to which the bolt-ons were constructed. This factor could have contributed to at least 95% of the respondents stating the EQ-5D-5L descriptive instrument with bolt-ons questions were either very easy or easy to understand and subsequently ease of understanding of the bolt-ons was also not associated with any socioeconomic factors. Comprehension level for the bolt-ons was not affected by age, gender, education level, employment status, marital status, income and household number.

This is in line with the intentions of the developers of the EQ-5D-5L instrument for easy administration of this HRQoL assessment tool. Past qualitative studies conducted in the early stages of development of the EQ-5D instrument showed that even among health researchers, the meaning of terms used to describe dimensions may be interpreted variably (12). This led to the EuroQol Group initiating an outline to define key concepts of the instrument with primary uses in translating the EQ-5D into different languages. Having proper understanding of the dimensions is important to ensure comparability and validity among studies conducted in different setting and countries.

The EQ-VAS, being part of the measure of general health in EQ-5D-5L, captured a wider range of issues that might influence individual perception of own health, from the usual physical illness to subjective matters such as spending enough time with one's loved ones. Observing the wide spectrum of reasons for the EQ-VAS responses of participants, the visual analogue scale may be better used as a complementary HRQoL tool, rather than a stand-alone tool considering that perception and rating of 'health' may vary significantly among individuals. However, the existence of a global health question such as the EQ-VAS allow perceptions of health that may not be collectively be shared by the majority of the population, be captured by a number ranging from zero to 100.

The concept of health or HRQoL is generally accepted to encompass physical, mental, and social wellbeing. Focus group discussions revealed that personal definitions of health may vary slightly but there are recurring concepts of health that are shared by many. Of the 11 bolt-on suggested, 5 can be classified as physical abilities (speaking, hearing, vision, vitality, sleep), 3 under mental concepts (mental abilities, happiness, stress), and the remaining 3 under social concepts (close relationships, social support, religion).

In structuring the concepts for the bolt-ons, similar wordings were used to describe the Likert scale with no problems being the first option and extreme problems being the last option. Only the religion bolt-on, being a more abstract concept, was worded differently with emphasis of religious belief to one's approach in life (from entire dependence on religion to none at all on the Likert scale).

The dimension of vitality, of which respondents collectively reported having most problems with (70% in this study), showed similar trend as in another large-scale EQ-5D-3L bolt-on study in Switzerland. The dimension was defined as 'energy/fatigue (15) in that study, and the description was quite similar to our description for vitality, despite a different term was used. Although the Swiss study involved randomly selected general population aged 20 and above, no information on how representative the sample were. Therefore, it cannot be said for certain that vitality is a culturally prevailing dimension for the Swiss population, only that adding this dimension to the original EQ-5D dimensions help to explain the variance (R^2) when regressed onto the EQ-VAS.

Stress is another dimension in this study with a higher percentage of respondents reporting having problem with. Surprisingly, stress has never been suggested in any previous EQ-5D-3L bolt-on studies. This could be because most of the past studies were conducted to address instrument limitations in condition-specific cases. The dimension of stress may be perceived as too general to test for in condition specific studies. Also, the factor of culture may come into play. The dimension was included in the phase 2 of our study as it was frequently highlighted in the focus group discussions (phase 1) as an important factor associated with feeling unhealthy. This feeling of un-healthiness was usually triggered by a variety of personal or work-related stressors and indeed, stress is often linked to poorer well-being and increased health issues (16).

Past bolt-on studies have been conducted in Southern Yorkshire, UK or the Netherlands where five additional dimensions including tiredness, vision, hearing (17), cognition (18) and sleep (19) have been tested. The former four dimensions were shown to significantly impact health state values in their utility index while only the sleep dimension was deemed less significant. Contrarily, a recent bolt-on study on the EQ-5D-3L instrument in Cape Town, South Africa (20) added sleep and concentration as bolt-ons as means to explain the variance of health in community based-populations. The bolt-ons did increase the explanatory power of the original instrument when the EQ visual analogue scale (EQ-VAS) was used as the dependent variable. Additionally, a vision bolt-on study conducted in Singapore (21) demonstrated that adding vision bolt-on to the existing EQ-5D-3L instrument better discriminated those with different levels of vision problems. The study suggested the index score of EQ-5D-3L with vision bolt-on was significantly more sensitive than the standard EQ-5D-3L index score in detecting changes of people with varying levels of visual impairment. However, it is to be noted that the study focused on discriminating different levels of visual impairment using the bolt-on index, and not deriving new bolt-ons based on differences in cultural values.

Depending on the populations and methods of testing used, the results of bolt-on studies generally vary in various countries with different cultures. A standardisation of methodology in bolt-on studies carried out in different populations may assist in revealing the true usefulness of particular bolt-on(s).

There are a few limitations in this study. Our study was conducted in the state of Penang, thus may not be generalizable to the whole of Malaysia. Also, phase 2 of the study only captured the self-reported health problems as reflected by the EQ-5D-5L descriptive instrument together with bolt-ons. No

preference-based valuation method was employed to quantify the explicit value of additional dimensions to better scope the need of such bolt-ons. Being an exploratory study, the sample size employed was small and the methodology was simple. Possible bias in the study might arise from the convenience sampling design of phase 2. The over-sampling of those who have employment may have skewed the results to favour vitality and stress as the two dimensions with highest reported problems. However, to the best of our knowledge, our study was the first in Malaysia and Southeast Asia to explore potential bolt-ons based on local culture and social-economic status. Observing that bolt-ons vitality and stress have more than half of the respondents reporting problem in them, these could be two additional dimensions worthy of more emphasis in future HRQoL studies. Therefore, it is hoped that the preliminary results of this study will provide insights into guiding the selection of bolt-ons for larger scale validation studies in the near future.

CONCLUSION

In our study, the HRQoL concept was seen to encompass a wider scope than currently covered by the EQ-5D-5L instrument, with the vitality and stress having most potential for bolt-ons in future valuation studies. This study suggested that the prospect of adding bolt-ons to complement the EQ-5D-5L instrument would better suit the HRQoL needs of the Malaysian population.

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APPENDIX 1
EQ-5D-5L with bolt-ons self-reported questionnaire

8. Under each heading, please tick the ONE box that best describes your health TODAY

8.1. MOBILITY
□ 1. I have no problems in walking about
□ 2. I have slight problems in walking about
□ 3. I have moderate problems in walking about
□ 4. I have severe problems in walking about
□ 5. I am unable to walk about

8.2. SELF-CARE
□ 1. I have no problems washing or dressing myself
□ 2. I have slight problems washing or dressing myself
□ 3. I have moderate problems washing or dressing myself
□ 4. I have severe problems washing or dressing myself
□ 5. I am unable to wash or dress myself

8.3. USUAL ACTIVITIES *(e.g. work, study, housework, family or leisure activities)*
□ 1. I have no problems doing my usual activities
□ 2. I have slight problems doing my usual activities
□ 3. I have moderate problems doing my usual activities
□ 4. I have severe problems doing my usual activities
□ 5. I am unable to do my usual activities

8.4. PAIN / DISCOMFORT
□ 1. I have no pain or discomfort
□ 2. I have slight pain or discomfort
□ 3. I have moderate pain or discomfort
□ 4. I have severe pain or discomfort
□ 5. I have extreme pain or discomfort

8.5. ANXIETY / DEPRESSION
□ 1. I am not anxious or depressed
□ 2. I am slightly anxious or depressed
□ 3. I am moderately anxious or depressed
□ 4. I am severely anxious or depressed
□ 5. I am extremely anxious or depressed

8.6. SLEEP
□ 1. I have no problems in getting enough sleep
□ 2. I have slight problems in getting enough sleep
□ 3. I have moderate problems in getting enough sleep
□ 4. I have severe problems in getting enough sleep
□ 5. I am unable to get enough sleep

8.7. VITALITY
□ 1. I am not tired at all
□ 2. I am slightly tired or lacking in energy
□ 3. I am moderately tired or lacking in energy
□ 4. I am severely tired or lacking in energy
□ 5. I am extremely tired or lacking in energy

8.8. HAPPINESS
□ 1. I am happy
□ 2. I am slightly unhappy
□ 3. I am moderately unhappy
□ 4. I am severely unhappy
□ 5. I am extremely unhappy

8.9. CLOSE RELATIONSHIPS
□ 1. I have no problems in keeping relationships with people close to me
□ 2. I have slight problems in keeping relationships with people close to me
□ 3. I have moderate problems in keeping relationships with people close to me
□ 4. I have severe problems in keeping relationships with people close to me
□ 5. I am unable to keep relationships with people close to me

8.10. STRESS
□ 1. I am not feeling stressful
□ 2. I am feeling slightly stressful
□ 3. I am feeling moderately stressful
□ 4. I am feeling severely stressful
□ 5. I am feeling extremely stressful

8.11. MENTAL ABILITIES
□ 1. I have no problems with memory
□ 2. I have slight problems with memory
□ 3. I have moderate problems with memory
□ 4. I have severe problems with memory
□ 5. I am unable to memorize

8.12. SOCIAL SUPPORT *(e.g. family, friends, peers, society)*
□ 1. I have no problems in getting enough social support
□ 2. I have slight problems in getting enough social support
□ 3. I have moderate problems in getting enough social support
□ 4. I have severe problems in getting enough social support
□ 5. I am unable to get enough social support

8.13. RELIGION
□ 1. My approach to life relies entirely on my religious belief
□ 2. My approach to life relies strongly on my religious belief
□ 3. My approach to life relies moderately on my religious belief
□ 4. My approach to life relies slightly on my religious belief
□ 5. My approach to life does not rely on my religious belief

8.14. VISION
□ 1. I have no problems in seeing
□ 2. I have slight problems in seeing
□ 3. I have moderate problems in seeing
□ 4. I have severe problems in seeing
□ 5. I am unable to see

8.15. HEARING
□ 1. I have no problems in hearing
□ 2. I have slight problems in hearing
□ 3. I have moderate problems in hearing
□ 4. I have severe problems in hearing
□ 5. I am unable to hear

8.16. SPEAKING

□ 1. I have no problems in speaking
□ 2. I have slight problems in speaking
□ 3. I have moderate problems in speaking
□ 4. I have severe problems in speaking
□ 5. I am unable to speak

LIST OF ORAL PRESENTATIONS

No	Presenting Author	Title
001	Lee LK	Prevalence of Polypharmacy and Its Associated Factors among Elderly in Old Folks Homes, Taiping
002	Cheong WL	The Effectiveness of Oral Methylcobalamin for the Treatment of Mild-Moderate Peripheral Neuropathy
003	Wadi NMA	Investigation of Healing Effect of *In Situ*-Forming Mucoadhesive Hydrogel on Ligature-Induced Periodontitis in Rats
004	Loo JSE	An Assessment of G Protein-Coupled Receptor Homology Models Constructed from Templates of Various Transmembrane Sequence Identities
005	Cheen AL	Assessment of the Impact of Automated Dispensing Cabinet Implementation in a Tertiary Hospital in Malaysia
006	Wong EYL	Stability Indicating HPLC-UV Method for Determination of Montelukast in Development of Chewable Tablet
007	Abu Arrah EM	Formulation of Omeprazole Nanosuspension Using High-Pressure Homogenization Method
008	Aizat Z	Scheduled Substances as a Cause Leading to Dangerous Drug Abuse
009	Wadi NMA	Development and Evaluation of *In Situ*-Forming Syringeable Mucoadhesive Gel Formulation for Periodontitis
010	Bacayo MFD	Job Satisfaction, Continuing Professional Development and Pharmaceutical Care Practices of Hospital Pharmacists in The Philippines and Malaysia: Basis for Pharmacy Professional Development Plan
012	Chua SS	Continuing Professional Development Activities Preferred by Community Pharmacists
013	Neivashini M	Survey on General Perception of Smoking Cessation among Patients Visiting Cardiology Clinic Hospital Serdang
016	Baharudin MSF	The Novel Finding of Perceived Stress Scale Between Type 2 Diabetes Mellitus Patients & Healthy adults
017	Abdul Rahman MN	Rheological Characterisation of *Baccaurea angulata* Dental Gels, and their Release Profiles
022	Zamery MI	Extraction of Protocatechuic Acid Enriched Fraction from *Clinacanthus Nutans* Leaves
024	Mohd GA	Stability Evaluation of Folic Acid and Photosensitizer-Folic Acid (PS-FA) Conjugate Through Design of Experiment Approach
028	Mohd HN	Subcritical Water Extraction as a Modern Green Extraction Technique of Hydroxychavicol from *Piper betle Linn*. Leaves
029	Bacayo MFD	Correlation of Target International Normalised Ratio (INR) and Patient's Understanding on Warfarin Therapy at Medication Therapy Adherence Clinic in Klang Valley
030	Abd Jalil MA	The Evaluation of Physicochemical and Antimicrobial Properties of Honey Based Hydrogel
032	Syed OSS	Effect of Cosmetic Cream containing *Piper betle Linn*. Extract on Skin: A Pilot Study
036	Lee AY	Downregulation of Semaphorin 5A in Human Glioblastomas by Alternative Splicing Causes a Loss of Its Tumour Suppressor Function
037	Mohamad NZ	Knowledge, Attitude and Perception of Muslim Consumers Towards Halal Cosmetic Products
038	Voo JYH	Perceptions of Medical Doctors Towards Clinical Pharmacists in Duchess of Kent Hospital (DOKH), Sandakan

042	Che Pa MF	Tuberculosis Incidence after Completion of Isoniazid Prophylaxis Therapy in Retroviral Disease Patients
043	Hammad MA	Statins Effects on Cataract among Patients With Type 2 Diabetes Mellitus
045	Hammad MA	The Equivalence between the Malay and UK English Versions of Mini-Addenbrooke's Cognitive Examination
048	Buang A	Halal Guide on the Use of Pharmaceutical Intoxicants in Medicines
049	Abubakar U	Single Dose Versus Multiple Doses of Antibiotic Prophylaxis in Caesarean Section: Protocol For a Systematic Review and Meta-analysis of African Studies
050	Ghadzi SMS	Pharmacometrics Modelling of the Natural Diabetes Disease Progression and Lifestyle Intervention Effects on Weight, Beta Cell Function and Insulin Sensitivity in Individuals with Impaired Glucose Tolerance
051	Sha'aban A	Personalisation of Aspirin Therapy: A Focus on Gastric Toxicity
056	Al-Sammarraie HJ	Design and Evaluation of Self Emulsifying Solid Dispersion of Ethanol Extract of Moringa Leaves and Assessment of Anti-inflammatory, Anti-Nociceptive and Anti-Rheumatoid Arthritis Activity
060	Aminu N	Compatibility Studies of Triclosan and Flurbiprofen with Formulation Excipients: A Systematic Drug-Drug and Drugs-Excipients Compatibility Screening
065	Ismail Z	Bone Mineral Density among Postmenopausal Malay Women
066	Nizaruddin MA	A Qualitative Study Investigating Medication Safety Issues Experienced by Community Pharmacists
067	Faller EM	Emerging Roles of Pharmacists in Global Health: Perspectives from the Asia Pacific Region
069	Samsudin S	Participation of Private and Government Healthcare Providers in Smoking Cessation Services (M-quit Services)
070	Pathmapiriyaa M	Effect of 'Educational Pamphlet' in Prevention of Human Papilloma Virus Related Infections among Young Adult Population
072	Mosleh RS	Relationship of Patient Characteristics and Organizational Factors with Health Care Collaboration among Type 2 Diabetes Patients in Palestine
074	Sim XY	The Effect of High Fat Diet Intake on Blood Glucose Level of Prediabetic and Type 2 Diabetic Rats.
078	Ali AN	Effect of Educational Pamphlet Regarding Human Papilloma Virus (HPV) Infections and HPV Vaccination: A KAP Study among Parents with Age Eligible Children for HPV Vaccination
083	Chiang XY	Research and Development of Self-Emulsifying Drug Delivery System for Enhanced Bioavailability of Curcumin
084	Stephanie S	*Gynura Crepioides* Leaves Extract : An Antibacterial Study
085	Idris B	Pharmacological Evidence for the Blood Pressure Lowering Effect of *Tapinanthus globiferus*
092	Gaurav A	Shared-Feature Pharmacophore Model of Phosphodiesterase10A Inhibitors
099	Qamar M	Knowledge and Attitude Towards Antibiotic Usage among General Public in Kuala Lumpur, Malaysia
100	Khan NH	Moisture Sorption Analysis of *Hibiscus sabdariffa L.* Spray Dried Extract
102	Nagojappa NBS	Computer Assisted Design, Synthesis and Acetylcholinesterase Inhibitory Activity of Some Indole Derivatives Targeting Alzheimer's Disease
103	Haseeb A	Evaluation of Antimicrobial Stewardship Programs Implementation and Outcomes Using Interrupted Time Series Analysis, in a Selected Hospital at Makkah, Kingdom of Saudi Arabia
104	Balasubramaniam S	Evaluation of Illness Perceptions and Their Associations with Glycaemic Control in Type 2 Diabetes Mellitus Patients at Hospital Pulau Pinang

MPSPSC2017000001 (Oral)
PREVALENCE OF POLYPHARMACY AND ITS ASSOCIATED FACTORS AMONG ELDERLY IN OLD FOLKS HOMES, TAIPING

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INTRODUCTION: Polypharmacy is a major health problem among the elderly and is responsible for drug related problems including adverse drug reactions, drug-drug interactions and non-adherence.
OBJECTIVES: The aim of this study is to determine the prevalence of polypharmacy and its associated factors among the elderly in old folk's homes of Taiping.
METHODS: An analytical cross sectional study was conducted in four old folks homes in Taiping, Perak. Four homes were chosen using purposive sampling followed by simple random sampling to choose 200 participants. The inclusion and exclusion criteria were aged 60 years and above and ability to participate in an interview. The questionnaires were divided into four parts, which were sociodemographic, health status, health seeking and polypharmacy. Charlson's comorbidity index was used to determine the extent of comorbidities and Morisky Medical Adherence Scale (MMAS-4) were used to determine medical non-adherence.
RESULTS: The prevalence of polypharmacy in this study was 36.2%. The predictors were alternative medicine usage, pharmacy visits, usage of vitamins and minerals, hospitalisation and co-morbidities. Among the polypharmacy group, the prevalence of adverse drug reaction was 53%, drug-drug interactions 8.2%, and non-adherence 5.4%.
CONCLUSIONS: The results in this study are consistent with numerous studies around the world on polypharmacy. This study can be generalised to the elderly population living in old folks homes in Perak as it included both the government and privately run old folks homes. Mandatory medical review by clinical pharmacists to reduce polypharmacy and drug related problems is recommended to overcome the negative effects of polypharmacy.

MPSPSC2017000002 (Oral)
THE EFFECTIVENESS OF ORAL METHYLCOBALAMIN FOR THE TREATMENT OF MILD-MODERATE PERIPHERAL NEUROPATHY

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INTRODUCTION: Methylcobalamin is often prescribed for the symptomatic treatment of peripheral neuropathy. Current evidence indicates potential efficacy with intrathecally or intramuscularly administered methylcobalamin. The efficacy of oral methylcobalamin taken alone for the treatment of peripheral neuropathy has not been well-established.
OBJECTIVE: The objective of this study is to evaluate the effectiveness of oral methylcobalamin therapy in treating the symptoms of peripheral neuropathy.
METHOD: Patients with peripheral neuropathy at an outpatient clinic were asked to identify the severity of their symptoms on a ten-point scale (0 = symptom-free, 10 = most severe) prior to starting therapy with oral methycobalamin (500mg three times daily). After 8 weeks of treatment with oral methylcobalamin patients were asked to score their symptom severity again as well as any adverse reaction experienced.
RESULTS: 50 patients were enrolled in the study. The median and mean symptom severity score at baseline was 3 and 2.44 out of 10, respectively. 21 patients (42%) reported improvements in the severity of symptoms experienced. There was no worsening of symptoms reported. Mean and median post-treatment symptom severity score was 2 and 1.76 ($p < 0.01$) respectively. 8 patients (16%) experienced adverse reactions.
CONCLUSION: Patients with peripheral neuropathy receiving oral methylcobalamin reported modest improvements in symptom severity. The clinical significance and economic benefit of prescribing oral methylcobalamin for the treatment of peripheral neuropathy remains uncertain.

MPSPSC2017000003(Oral)
INVESTIGATION OF HEALING EFFECT OF *IN SITU*-FORMING MUCOADHESSIVE HYDROGEL ON LIGATURE-INDUCED PERIODONTITIS IN RATS

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INTRODUCTION: Periodontitis is a serious gum inflammation that damages the soft tissue in response to bacterial infections.
OBJECTIVE: The aim of the study was to investigate the healing effect of in situ-forming mucoadhesive hydrogel containing metronidazole (antibacterial) and diclofenac sodium (anti-inflammatory) on ligature-induced periodontal disease (EIPD) in rats using histological evaluation.
METHODS: 30 Sprague-Dawley (SD) rats were used. EIPD was induced in using silk thread ligatures around the lower frontal teeth of the animal. Five groups with six animals in each group namely, (i) Naive group (neither subjected to EIPD nor treated); (ii) Non-treated (NT) group (subjected to EIPD but not treated), (iii)Group treated with metronidazole after subjected to EIPD, (iv) Group treated with diclofenac potassium after subjected to EIPD; (v) Group treated with both drugs after subjected to EIPD. After 6 days, the effect of the treatments was evaluated based on clinical appearance and histopathology using hematoxylin - eosin staining of the gingival tissue.
RESULTS: A statistically significant difference ($p < 0.05$) was noted in the inflammatory and repair parameters of the healing process between the treated groups and the control. Moreover, treatment with both drugs accelerated the healing significantly ($p < 0.0001$) compared to drugs given alone.
CONCLUSION: The combination of antibacterial and anti-inflammatory agent demonstrated a significantly faster healing than each agent alone. Local delivery plays a potentially advantageous role in the clinical therapy of periodontal disease.

MPSPSC2017000004 (Oral)
AN ASSESSMENT OF G PROTEIN-COUPLED RECEPTOR HOMOLOGY MODELS CONSTRUCTED FROM TEMPLATES OF VARIOUS TRANSMEMBRANE SEQUENCE IDENTITIES

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INTRODUCTION: G protein-coupled receptor (GPCR) crystal structures have recently become more readily available. However, homology modelling still represents a crucial method for structure-based drug design involving GPCRs. The new crystal structures therefore provide the opportunity to assess the relative performance of GPCR homology models.
OBJECTIVES: This study aimed to assess the performance of GPCR homology models relative to their crystal structures in two common structure-based drug design applications: ligand binding pose prediction and enrichment in virtual screening.
METHODS: Homology models for eight class A GPCR targets were constructed from three templates with varying transmembrane sequence identities each using Modeller. Ligand binding pose prediction was assessed via Root Mean Square Deviation (RMSD) following re-docking of the cognate ligand using Glide with the Induced Fit Docking (IFD) protocol. Virtual screening enrichment was assessed via the LogAUC of Receiver Operating Characteristic curves following screening of a ligand set containing 50 high binding affinity ligands ($pKi > 7.5$) with matched decoys. Both the initial homology models and models optimized through IFD were studied for enrichment.
RESULTS: Crystal structures performed better than their corresponding homology models in both assessments. Accurate ligand binding pose prediction was possible but was generally difficult to achieve using homology models. In virtual screening using homology models still conferred significant enrichment compared to random selection, with clear benefit also observed in using models optimized through IFD.
CONCLUSION: Homology models of GPCRs that are reasonably accurate structurally can be constructed, but the performance of these models remain significantly inferior to crystal structures.

MPSPSC2017000005(Oral)
ASSESSMENT OF THE IMPACT OF AUTOMATED DISPENSING CABINET IMPLEMENTATION IN A TERTIARY HOSPITAL IN MALAYSIA

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INTRODUCTION: Automated Dispensing Cabinets (ADCs) are often core components of closed loop medication management systems. ADCs were implemented since 2006 in 12 wards of a tertiary hospital.
OBJECTIVE: To assess the impact of implementing ADCs on medicines management in inpatient wards.
METHODS: Data were collected on the impact of implementing ADCs, including medication supply time from pharmacy, time savings for pharmacy and nursing on manual processes, medication stock discrepancies, and medication errors. The hospital's practice of using ADCs was benchmarked against the Institute for Safe Medication Practices' (ISMP's) Medication Safety Self Assessment for ADCs.
RESULTS: 70% of inpatient medications prescribed is available in the ADC, reducing turnaround time for medication supply by 45% compared to wards with no ADC. Pharmacy staff saved 7 hours per day on processing manual resupply of medications, while nursing staff spent 10 hours less per week on managing manual ward stocks. There was 93% reduction in stock discrepancies in wards with ADCs compared to those with none. The use of profiling feature in ADCs, where medication orders are reviewed by pharmacy prior to medication removal, has reduced errors related to ADC usage in critical care wards by 71%. Results from the benchmark against ISMP guidelines showed that the hospital's score on safe use of ADCs (82%) is comparable to hospitals in the USA (79%).
CONCLUSION: Implementation of ADCs has automated the distribution and management of medications in this hospital. This augurs well as the hospital embarks towards achieving a closed loop medication management system.

MPSPSC2017000006 (Oral)
STABILITY INDICATING HPLC-UV METHOD FOR DETERMINATION OF MONTELUKAST IN DEVELOPMENT OF CHEWABLE TABLET

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INTRODUCTION: Montelukast, a leukotriene receptor antagonist used in the treatment of chronic asthma, is susceptible to photodegradation and oxidation degradation. HPLC-UV method is commonly used for identification of possible impurities or degradants arisen during stability studies.
OBJECTIVE: The objective of this study was to develop and validate a simple, sensitive and stability-indicating HPLC-UV method for the determination of montelukast and its impurities in the development of chewable tablet formulation.
METHODS: Chromatographic separation was achieved using Atlantis® T3 3µm C_{18} (4.6mmID X 10cm) analytical column. The mobile phase consisted potassium dihydrogen phosphate (0.05mM)-acetonitrile-triethylamine (450:550:1.33, v/v/v) adjusted to pH 2.0 with orthophosphoric acid. The analysis was run at a flow rate of 1.5 mL/min with detection wavelength at 255nm. Method validation was performed in accordance to ICH guidelines. Stress degradation studies, comprising of acid and alkali hydrolysis, oxidative hydrogen peroxide degradation, photodegradation in solution and solid state as well as heat degradation, were performed.
RESULTS: The standard calibration curve was linear from 0.0025 - 0.375mg/mL. Montelukast sodium was sensitive to photodegradation, oxidation and acid hydrolysis. Oxidative degradation kinetic study showed that montelukast sodium followed first order reaction. The detection limit and quantification limit were 0.01µg/mL and 0.04µg/mL. System suitability evaluation and relative standard deviation (%RSD) of below 2.0% indicated that the analytical method was robust.
CONCLUSION: The stability indicating HPLC-UV method was successfully developed and validated for determination of montelukast and its impurities in the development of chewable tablet formulation.

MPSPSC2017000007 (Oral)
FORMULATION OF OMEPRAZOLE NANOSUSPENSION USING HIGH-PRESSURE HOMOGENIZATION METHOD

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INTRODUCTION: The oral route is the dominant and most convenient drug delivery route for patients. Most of the available active pharmaceutical active ingredients are hydrophobic drugs with the major limitation in oral bioavailability. Omeprazole is a good example of this type of active ingredient.
OBJECTIVES: The study objective was to optimize an omeprazole nanosuspension using a high-pressure homogenization method to improve the bioavailability of omeprazole.
METHODS: Omeprazole nanosuspensions were developed using a high-pressure homogenization method. Various surfactants were screened. Poloxamer 188 (2% w/v) was chosen for optimization studies. Then, a Box-Behnken design was utilized to optimize designated formulation and process parameters. Omeprazole nanosuspensions were characterized for particle size, polydispersity index and zeta potential.
RESULTS: From our study,10 mg omeprazole for initial drug weight, 1500 bar for homogenization pressure and 30 cycles of homogenization provided a nanosuspension of mean particle size of 85 nm with polydispersity index of 0.23 and zeta potential of -46.9 mV.
CONCLUSION: The high-pressure homogenization method is an effective way to prepare a successful omeprazole nanosuspension.

MPSPSC2017000008 (Oral)
SCHEDULED SUBSTANCES AS A CAUSE LEADING TO DANGEROUS DRUG ABUSE.

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INTRODUCTION: Products containing scheduled substances such as psychotropic pills, cough medicines and *Mitragyna Speciosa* (ketum) had been frequently abused, mainly due to their addictive potential. The widespread abuse of products containing scheduled substances often perceived as less threatening compared to the pandemic issue of illicit dangerous drugs use.
OBJECTIVES: This study aims to qualitatively investigate the issues surrounding the abuse of products containing scheduled substances and the relationship between the abuse of these products and the illicit use of dangerous drugs among the clients in Cure & Care Clinic Karangan, Kedah.
METHODS: Direct interview sessions were simultaneously held by four interviewers, involving a total of thirty clients at the Cure & Care Clinic Karangan, Kedah. Convenience sampling method was used. Interviewers were given a set of questions as reference points. Interviews were done until the data saturation point was achieved. Interviews were audio-recorded, transcribed verbatim, and the data was analysed into themes.
RESULTS: The thematic analysis grouped the data into five themes, namely the factors triggering scheduled substance abuse, accessibility and affordability of the abuse scheduled substances, the types of scheduled substances abused and illicit use of dangerous drugs, dependence or habit-forming effects, and the ramification of substance addiction. Two main products containing scheduled substances; cough preparations and ketum had been identified as the popular choice for abuse among the clients. The thematic analysis of the data showed that the abuse of these products were driven by several socioeconomic factors and catalysed by the ubiquity of these products. The abuse of products containing scheduled substances has been shown to eventually lead to the use of dangerous drugs among the clients.
CONCLUSIONS: Current approach on enforcement activities and regulations on abuse-prone scheduled substances need to be revamped as an effort in tackling the issue of illicit dangerous drug use.

MPSPSC2017000009 (Oral)
DEVELOPMENT AND EVALUATION OF *IN SITU*-FORMING SYRINGEABLE MUCOADHESIVE GEL FORMULATION FOR PERIODONTITIS

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INTRODUCTION: Periodontitis is an inflammatory dental disease caused by pathogenic microorganisms. Local delivery of in situ-forming syringeable mucoadheisve gel formulation containing anti-inflammatory and antibacterial drugs is a treatment of choice for periodontitis.
OBJECTIVE: To develop poloxamer based in situ-forming syringeable mucoadhesive gel formulations containing metronidazole and diclofenac potassium and evaluate the in-vitro drug release, syringeability, antibacterial property and anti-inflammatory effect.
METHODS: Gel formulations incorporated with metronidazole and diclofenac potassium, comprising of different ratio of mixture of Poloxamer 407 and Poloxamer 188, Carbopol 934 and xanthan gum were prepared. The gel formulations were evaluated for syringeability and in vitro drug release. The antibacterial study was conducted using agar diffusion method against four types of bacteria, P. gingivalis, Strep. mutans, Staph. aureous and E.coli. Anti-inflammatory activity was evaluated using carrageenan-induced paw edema in rat.
RESULTS: Mixture of Poloxmer 407 (20%) and Poloxamer 188(10%) gelled at 35.7 ±0.6 °C. All the gel formulations were syringeable. A statistically significant difference ($p < 0.05$) was observed in drug release among the gel formulations. The optimized gel formulation showed slow release of both drugs up to 120 hours. The gel formulation inhibited the growth of microorganisms and decreased the carrageenan-induced paw edema in rat for four hours when compared with the control.
CONCLUSION: In situ-forming syringeable mucoadheisve gel formulation containing antibacterial and anti-inflammatory drugs, metronidazole and diclofenac potassium, was successfully developed and exhibited sustained drug release. The gel formulation demonstrated antibacterial and anti-inflammatory effects.

MPSPSC2017000010(Oral)
JOB SATISFACTION, CONTINUING PROFESSIONAL DEVELOPMENT AND PHARMACEUTICAL CARE PRACTICES OF HOSPITAL PHARMACISTS IN THE PHILIPPINES AND MALAYSIA: BASIS FOR PHARMACY PROFESSIONAL DEVELOPMENT PLAN

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INTRODUCTION: Pharmacist should be at higher concern about their job performance, efficiency at work and job satisfaction which is a contributing factor for a person's productivity that will influence job performance. It is the pharmacy practitioners' responsibility to enhance and upgrade their knowledge, skills, and capabilities to remain effective and compliant. The transition of pharmacy practice is pharmaceutical care practices, the era of taking responsibility in the performance of clinical functions.
OBJECTIVES: This study aimed to determine the level of job satisfaction, level of awareness and engagement in continuing professional development and effectiveness in carrying out pharmaceutical care practices of hospital pharmacist.
METHODS: This quantitative study used the descriptive survey method using a validated self-made questionnaire administered among 200 pharmacists from hospitals in Davao City and Selangor. The data obtained from both locations were analysed using descriptive and inferential statistics.
RESULTS: The findings showed that hospital pharmacists were satisfied with their jobs. Their awareness to continuing professional development is high but their participation in research is very low. The level of pharmaceutical care practices is of great extent.
CONCLUSION: There is no significant difference on the pharmaceutical care practices of the pharmacists. There is a significant low correlation between job satisfaction and pharmaceutical care practices. A significant association exist between continuing professional development and pharmaceutical care practices.

MPSPSC2017000012(Oral)
CONTINUING PROFESSIONAL DEVELOPMENT ACTIVITIES PREFERRED BY COMMUNITY PHARMACISTS

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INTRODUCTION: Continuing professional development (CPD) is an approach to ensure that healthcare professionals such as the pharmacists are kept up-to-date in their knowledge and skills throughout their professional careers.
OBJECTIVES: To determine the types of CPD activities preferred by community pharmacists in Malaysia and to identify the barriers in achieving the required CPD points.
METHODS: A cross-sectional study on community pharmacists in Malaysia was conducted. An online questionnaire was distributed to all community pharmacists in Malaysia using survey monkey. To maximize the response rate, a reminder was sent to all the community pharmacists two weeks after the first email.
RESULTS: A total of 513 community pharmacists completed the questionnaire. Most of the respondents participated in CPD activities to improve their professional skills and performance, and to comply with the CPD requirements (95% and above). The most preferred CPD activities were Continuing Medical Education (CME) [66.3%] which consisted of seminars, lectures, and forum; and workshops or courses (64.9%). The main barrier to participation in CPD activities were job constraints and accessibility to the activities. Most of the respondents were interested in topics related to nutrition and diet, pain management, paediatric, infectious disease and adverse drug reactions.
CONCLUSION: Community pharmacists preferred taught CPD activities but job constraint was the main barrier. Therefore, CPD providers should organize more of such activities and not during working hours.

MPSPSC2017000013(Oral)
SURVEY ON GENERAL PERCEPTION OF SMOKING CESSATION AMONG PATIENTS VISITING CARDIOLOGY CLINIC HOSPITAL SERDANG

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INTRODUCTION: Tobacco smoking is one of the risk factors for cardiovascular disease .Quit Smoking Clinic Hospital Serdang was established to assist patients to successfully quit smoking. This study aims to identify the general perception of smoking cessation among patients who smoked visiting Cardiology Clinic, Hospital Serdang.
METHOD: This study was done from December 2016 until March 2017. A validated questionnaire was developed and tested to assess this study objective. The self-administered questionnaire was then distributed to the target group.
RESULTS: A total of 330 tobacco smoking patients were recruited. 93% (n=307) are male and 65% (n=214) age ranging 45 to64 years old. 37% (n=122) respondents have smoked cigarette for 11-20 years, followed by30% (n = 99) for 1-10 years. Most of the respondent aware that smoking can deteriorate heart disease (83%, n=273). 45% (n=150) of respondents have planning or have made an attempt to quit smoking. The most common reasons to quit smoking are, concern with current (56%, n= 184) and future health (59%, n=192). The most frequent reasons given by respondents for not quitting smoking were due to withdrawal symptoms (18%, n=60) and fear of failure (17%, n=55).
CONCLUSION: This study, demonstrated that respondents have a positive awareness and willingness towards quitting smoking. Therefore, continuous and comprehensive guidance of health care professionals will increase the patients' willingness to quit smoking. Thus, a referral to QSC should be made to maintain and promote cardiovascular disease patients' motivation to quit smoking.

MPSPSC2017000016 (Oral)
THE NOVEL FINDING OF PERCEIVED STRESS SCALE BETWEEN TYPE 2 DIABETES MELLITUS PATIENTS & HEALTHY ADULTS

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INTRODUCTION: Stress is unpleasant, but one of the most common psycho-social life experiences among people worldwide. Stress is believed to affect eating behaviour, blood glucose level, cholesterol level and obesity. These impaired physiological systems can leads to the catastrophic phenomenology on metabolic activity.
OBJECTIVES: This study aimed to compare the Perceived Stress Scale (PSS) between Type 2 Diabetes Mellitus (T2DM) patients with healthy adults in Hospital Pekan, Pahang.
METHODS: A case-control study was conducted among 208 subjects (104 T2DM and 104 healthy) of Hospital Pekan, Pahang. Sample size comprised of 208 respondents after fulfilling all inclusion and exclusion criteria. A validated Malay version of PSS questionnaire was used to collect the data in order to assess their stress level. The result then was analysed descriptively and inferentially.
RESULTS: The mean value for both groups' PSS score was found (38.72 ± 10.87). T2DM patients' PSS was higher (48.93 ± 2.92) with minimum and maximum PSS score of 36.00 and 56.00 respectively compared to healthy adults (28.51 ± 4.28) by minimum and maximum PSS score of 16.00 and 41.00 correspondingly (P=0.000).
CONCLUSION: Findings of this research suggested that patients with T2DM have poorer psychological well-being (high PSS) contrasting with normal healthy persons.

MPSPSC2017000017 (Oral)
RHEOLOGICAL CHARACTERISATION OF *BACCAUREA ANGULATA* DENTAL GELS, AND THEIR RELEASE PROFILES

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INTRODUCTION: *Bacaurea angulata* has potential wound healing effect on the dental wound due to its hight antioxidant contents. Plant extract is expected to affect the polymer networks that form the gel and lead to several changes including rheological and release profiles.
OBJECTIVES: To characterize the rheological and release profiles of Baccaurea angulata dental gels.
METHOD: Three different gel polymers which are Carbopol 940, Guar Gum and Konjac Gum, were being characterised rheologically before and after the incorporation of the 3% w/w *Baccaurea angulata* extract. Later, these gels will be tested their release profiles using Franz Diffusion Cell.
RESULTS: It was found that apparent viscosity of the gels at 3 different shear rate as well as shear stress needed to produce shear rate of $100s^{-1}$, decrease after incorporation of extracts in all gel polymers. The Franz Cell Diffusion result has shown significant difference in term of released content, where Carbopol 940 was identified as the gels that release the highest percentage (75.75 ± 1.18%), followed by Guar Gum and Konjac Gum which are 36.71± 0.44%, and 32.33 ± 0.31% respectively. Regarding the mean flux, Carbopol 940 and Konjac Gum have the highest value within the first hour of application compared to Guar Gum which takes 7 hours to release most of its content. Carbopol 940 was found to releasing the maximum amount of content with the fastest rates.
CONCLUSION: It is concluded that carbopol 940 is the best polymer candidates for Baccaurea angulata dental gel formulation, since it has the best release and rheological profiles.

MPSPSC2017000022 (Oral)
EXTRACTION OF PROTOCATECHUIC ACID ENRICHED FRACTION FROM *CLINACANTHUS NUTANS* LEAVES

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INTRODUCTION: *Clinacanthus nutans* is abundant in Malaysia. It contains bioactive compounds such as phenolics. PCA is a phenolic acid, naturally existed in plant species including *C. nutans.* It has beneficial effects especially for the treatment and prevention for diseases pertinent to oxidative stress.
OBJECTIVES: To extract PCA enriched fraction from *C. nutans* leaves, analyse it with validated high-performance liquid chromatography (HPLC) method, assess its anti-oxidant capacity.
METHODS: The leaves were macerated in n-hexane followed by dichloromethane and methanol. Methanol extract was fractionated by vacuum liquid chromatography (VLC) and the fractions were screened by thin layer chromatography (TLC). The fraction was analysed by validated HPLC method. Anti-oxidant activity assay was performed by 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay.
RESULTS: 32 fractions were obtained with VLC. Four fractions (F1 – F4) were acquired after pooling similar TLC pattern. As compared to F3, F2 had been observed to possess more intense spot of PCA while F1 and F4 have no PCA spot. All parameters for HPLC method validation were within the specifications. HPLC of F2 showed PCA at 8.124 minutes retention time with the highest peak area among other compounds at 260 nm. Anti-oxidant assay showed anti-oxidant activity for F2 (IC50=898.51±10.93mg/mL) is the highest as compared to unfractionated methanol extract (IC50=1148.20±19.25mg/mL) ($p=0.001$) and other extracts ($p<0.001$).
CONCLUSION: PCA enriched fraction (F2) was obtained from *C. nutans* leaves. F2 possesses the highest anti-oxidant among others, thus, it can be utilized in future research focuses on anti-oxidant applications. *Clinacanthus nutans*, DPPH, fractionation, protocatechuic acid, VLC.

MPSPSC2017000024 (Oral)
STABILITY EVALUATION OF FOLIC ACID AND PHOTOSENSITIZER-FOLIC ACID (PS-FA) CONJUGATE THROUGH DESIGN OF EXPERIMENT APPROACH

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INTRODUCTION: Folic acid is a small molecule that has shown great potential as a targeting agent in a number of diseases. In certain type of cancers such as the ovarian cancer, due to the upregulation of folate receptor, folic acid can be used as a targeting agent to specifically deliver therapeutic molecules. However, in our endeavour to utilize folic acid in the delivery of photosensitizer (PS) for photodynamic therapy (PDT), we found that the conjugate of PS-folic acid has a problem of stability – the conjugate was inactivated due to the degradation of folic acid molecule.
OBJECTIVE: Hence, in order to understand this issue and to decide the suitable measures to overcome the degradation problem, a stability study was conducted on folic acid and a model of PS-folic acid conjugate.
METHOD: The molecules were exposed to five factors – light, different temperatures, different medium, and presence of oxygen and time length. The Design of Experiment (DOE) approach was taken to evaluate the different factors. Overall, 26 experiments were conducted (three replicates) and the results were analysed by statistical analysis.
RESULTS: From the result obtained, light was shown to be the most important factor in causing the degradation of folic acid and PS-folic acid conjugate. The other factors have less significant influence on the stability of the molecules.
CONCLUSION: It is important to protect or minimize the exposure of the molecules to light during manipulation and analysis. This will ensure the delivery of active molecules during therapy.

MPSPSC2017000028 (Oral)

SUBCRITICAL WATER EXTRACTION AS A MODERN GREEN EXTRACTION TECHNIQUE OF HYDROXYCHAVICOL FROM *PIPER BETLE LINN*. LEAVES

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INTRODUCTION: Hydroxychavicol is commonly extracted from *Piper betle* leaves using conventional solvent extraction. However, there is a modern green extraction technique using subcritical water to extract hydroxychavicol at a high temperature between 100 and 374 and a high pressure. It is used due to cost-effectiveness, time-saving, greater extraction yields and environmental friendly.
OBJECTIVES: To determine optimum conditions for subcritical water extraction of hydroxychavicol and to compare hydroxychavicol yield between conventional solvent extraction and subcritical water extraction techniques.
METHODS: Subcritical water extraction of hydroxychavicol was carried out at different temperatures ranging from 80 to 180? Then, it was conducted at different static extraction time interval of 10, 30, 60 and 90 minutes with total extraction time of 180 minutes. The hydroxychavicol content was analyzed by using a validated high performance liquid chromatography (HPLC) method. The HPLC method was validated for linearity, specificity, accuracy, precision, limit of detection (LOD) and limit of quantification (LOQ).
RESULTS: The highest amount of hydroxychavicol (11.05%) was extracted from *Piper betle* leaves using subcritical water extraction at 100? with static extraction time interval of 60 minutes. Subcritical water extraction showed significantly greater hydroxychavicol yield of 11.05% compared to solvent extraction of 7.78% (P=0.04). The HPLC method showed a good linearity (r^2>0.999), satisfactory accuracy (percentage difference 0.1 to 1.33%), precision (RSD 0.11 to 1.44%) with low LOD (0.13µg/mL) and LOQ (0.43µg/mL).
CONCLUSION: Subcritical water extraction has potential to be an alternative extraction technique of hydroxychavicol from *Piper betle* leaves.

MPSPSC2017000029 (Oral)

CORRELATION OF TARGET INTERNATIONAL NORMALISED RATIO (INR) AND PATIENT'S UNDERSTANDING ON WARFARIN THERAPY AT MEDICATION THERAPY ADHERENCE CLINIC IN KLANG VALLEY

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INTRODUCTION: Warfarin has been prescribed as an oral anticoagulant that needs consistent monitoring of the international normalised ratio (INR). Patients' concurrent compliance and education of therapy plays an important role in avoidance of the adverse drug events as well as controlling INR level.
OBJECTIVES: To evaluate the patient's understanding on warfarin therapy and target INR goal and to establish its correlation.
METHOD: A prospective study design was used in warfarin Medication Therapy Adherence Clinic (MTAC) from April 2016 until July 2016. 243 patients prescribed with warfarin were identified. Patients were interveiwed using Perception of Anticoagulant Therapy Questionnaires (PACTQ). Medical data were reviewed for INR levels. Data were investigated using Spearman correlation analysis ($p<0.05$).
RESULTS: A total of 97 were eligible and accepted to complete the questionnaires. One third of subjects had a secondary level of education, 50% were employed. Half who participated were Malay, aging from 45 to 64 years old. Most of the patients used warfarin for more than 5 years. Mean score PACTQ test among participants was 66.2± 5.4, while for INR control, poor understanding of patients dominates the most 78± 17.3, which account highest among the three groups. Significant differences were found among the level of understanding among different gender. There was a significant correlation between patient's warfarin therapy perception and the time spent with the therapeutic range (TTR %) (r=0.036; p=0.727).
CONCLUSION: The study found no significant relationship exists between patient's understanding on warfain therapy and target INR goal.

MPSPSC2017000030 (Oral)
THE EVALUATION OF PHYSICOCHEMICAL AND ANTI-MICROBIAL PROPERTIES OF HONEY BASED HYDROGEL

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INTRODUCTION: Hydrogel possess three-dimensional cross linked networks of hydrophilic polymers. Honey contains anti-microbial properties due to its peroxide and non-peroxide components.
OBJECTIVES: To develop and characterize honey based hydrogel formulation and to evaluate its anti-microbial properties.
METHODS: The hydrogel were developed by combining polyvinyl alcohol (PVA) and polyethylene glycol (PEG). 1% protein-free agar was added to the combination as well as honey according to their respective formulations. Then, the characterization tests consist of gel fraction; swelling ratio and water vapour transmission (WVTR) were conducted. For the antimicrobial evaluation, microbial limit test and agar diffusion test were conducted against *Staphylococcus aureus* and *Pseudomonas aeruginosa*.
RESULTS: For the gel fraction test, the control formulation was significantly ($p<0.05$) highest among the others; indicates that the PVA in this formulation was almost completely cross-linked. For the swelling ratio test, formulation 2 that contain 20% (w/v) honey was significantly ($p<0.05$) higher than the control and agar groups; indicates a higher water uptake occurred. The WVTR of formulation 2 was within the recommended range which is in between 80–105gm $^{-2}$day $^{-1}$. Formulation 5 with 40% (w/v) honey has shown anti-microbial effect towards *Staphylococcus aureus*. For microbial limit tests, all formulations showed the absence of bacteria in their respective surfaces.
CONCLUSIONS: Formulation 2 demonstrated significantly better physicochemical properties but displaying no anti-microbial properties. However, formulation 5 showed an acceptable physicochemical properties but able to display a good anti-microbial properties. Therefore, formulation 5 will be selected for further studies.

MPSPSC2017000032 (Oral)
EFFECT OF COSMETIC CREAM CONTAINING *PIPER BETLE LINN*. EXTRACT ON SKIN: A PILOT STUDY

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INTRODUCTION: *Piper betle* L. a local Malaysian plant from piperaceae family or also known as *sireh* has been found to possess many therapeutic benefits. Although this plant has been widely studied, there are minimal data on the benefits of this plant on the skin. Hence, the extract of this plant was formulated into a cosmetic cream for skin application with natural based ingredients.
OBJECTIVES: This study aims to evaluate effects of the cream incorporating Piper betle L. extract on human skin such as skin-lightening, hydration and elasticity.
METHODS: To study the effect of this formulation on the skin a pilot study was done on 6 subjects, both male and female, in order to see the effects of this cream on the melanin content, hydration and elasticity of the skin. The skin parameters were measured during baseline and weekly for 4 weeks using several probes from Dermalab Combo®.
RESULTS: The overall results for melanin content showed that the melanin content of the skin is significantly reduced ($p=0.000$). This maybe contributed by the anti-tyrosinase activity of hydroxychavicol. Elasticity parameters also showed significant reduction in the mean values ($p=0.007$) which may be due to anti-oxidant activity contributed by high total phenolic content. However, hydration parameter showed no significant improvement. This is most likely due to multiple factors that may affect the skin's hydration such as time of skin test, water intake and environmental factors.
CONCLUSION: *Piper betle* L. may be able to exert beneficial effects on the skin with consistent use.

MPSPSC2017000036 (Oral)
DOWNREGULATION OF SEMAPHORIN 5A IN HUMAN GLIOBLASTOMAS BY ALTERNATIVE SPLICING CAUSES A LOSS OF ITS TUMOR SUPPRESSOR FUNCTION

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INTRODUCTION: Semaphorins and their receptors plexins are families of axon guidance molecules involved in diverse biological functions. We have recently demonstrated the effects of semaphorin 5A (Sema5A) in inhibiting migration and invasion in human glioblastoma cells. Notably, Sema5A protein level is markedly downregulated in astrocytoma specimens from low to high grade. We therefore hypothesized that Sema5A subserves tumor suppressor function in glioblastomas, which is compromised due to a dysregulation of its expression, hence contributing to brain cancer development.
OBJECTIVES: To examine the mechanism underlying downregulation of Sema5A protein expression in high-grade glioblastomas. Its anti-tumorigenic function was validated by reconstitution of expression in glioblastoma cells.
METHODS: Sema5A mRNA transcripts in human astrocytoma of different grades were subjected to quantitative real-time PCR and sequence analysis to determine its expression level and identify genetic aberrations. Wild-type Sema5A and splice variants were ectopically expressed and assayed for anti-tumorigenic function.
RESULTS: While neither mutation nor significant change in mRNA levels was observed in Sema5A across different grades of astrocytoma, a number of alternatively spliced variants of Sema5A transcript were found to be expressed at comparable level as the wild-type counterpart. Ectopic expression of these variants in HEK293 cells results in premature truncation isoforms of Sema5A protein, which are unstable and targeted for proteasomal degradation. Reconstitution of Sema5A expression in glioblastoma cells is sufficient to suppress anchorage-independent growth.
CONCLUSION: Sema5A is downregulated in glioblastomas by alternatively splicing, which causes a loss of its anti-tumorigenic function. Sema5A therefore represents a promising therapeutic agent for brain cancers.

MPSPSC2017000037 (Oral)
KNOWLEDGE, ATTITUDE AND PERCEPTION OF MUSLIM CONSUMERS TOWARDS HALAL COSMETIC PRODUCTS

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INTRODUCTION: 'Halal' is not restricted to only food and beverages, but also cosmetics. In Malaysia, cosmetic products are not yet subjected to obtain halal certification to be marketed. Thus, Muslims are responsible to ascertain the halal status of cosmetic products to avoid 'prohibited ingredients' according to Islam.
OBJECTIVES: This study aimed to investigate the knowledge, attitude and perception of Muslim consumers towards halal cosmetic products.
METHODS: A cross-sectional study was conducted by distributing a self-administered questionnaire via online and paper-form hardcopies. Questionnaire was divided into four parts: socio-demographic, and knowledge, attitude and perception, of the consumers, related to halal cosmetic products. Prior to the full-scale study, a feasibility study was conducted using snowball sampling to run a reliability analysis for the questionnaire. Data were analysed using SPSS version 19.0. RESULTS: In the feasibility study (N=40), Cronbach's Alpha indicated within good and acceptable range; knowledge (0.837), perception (0.834) and attitude (0.732). The full-scale study received 363 responses from Muslim consumers all over Malaysia (female, 75.5%; male, 24.5%). Malays were 97.8%, and 72.5% were within 21-25 years old. Data found that 51% and 48% of respondents have good and moderate knowledge respectively. For attitude, 44% and 22% of respondents agreed and strongly agreed to switch to halal-certified products, and respectively, 25% and 57% agreed and strongly agreed that cosmetic products should obtained halal certification before being marketed.
CONCLUSION: In general, it was found that more than half of the Muslim consumers have good knowledge, attitude and perception towards halal cosmetic products.

MPSPSC2017000038 (Oral)
PERCEPTIONS OF MEDICAL DOCTORS TOWARDS CLINICAL PHARMACISTS IN DUCHESS OF KENT HOSPITAL (DOKH), SANDAKAN

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BACKGROUND: Clinical pharmacists are recognised as major provider of valid evidence-based information on the suitability, cost-effectiveness and safety of medications. Study regarding perceptions of medical doctors (medical officers and physician) towards clinical pharmacists has not been previously conducted in DOKH.
OBJECTIVES: This study aimed to assess the perceptions of medical doctors towards clinical pharmacists in DOKH and to identify the obstacles which hinder the integration of clinical pharmacists into the primary healthcare team.
METHODS: A cross-sectional validated questionnaires was carried out on all consented medical doctors in DOKH (n=120) from February to April 2017. All collected data was tabulated and presented using descriptive analyses.
RESULTS: Most of the medical doctors in DOKH expressed willingness to cooperate with clinical pharmacists (93.3%). Almost all respondents agreed that the clinical pharmacist has a role in patient medication education (98.3%). A huge majority agreed that clinical pharmacist is an important integral role part of the clinical ward team (96.7%) by minimising medication errors, maximising cost-effectiveness and hence improving patient therapy outcome (97.5%). Nevertheless, only 65% of medical doctors believed that the clinical pharmacist have fulfilled his/her role. One-third of respondents identified poor communication skills and lack of clinical knowledge, confidence and training as barriers to clinical pharmacists integrating into the primary healthcare team.
CONCLUSION: A large proportion of medical doctors had positive perceptions towards clinical pharmacists in DOKH. Lack of clinical knowledge, confidence and training and poor communication skills are the major obstacles for integration of clinical pharmacists into the primary healthcare team.

MPSPSC2017000042 (Oral)
TUBERCULOSIS INCIDENCE AFTER COMPLETION OF ISONIAZID PROPHYLAXIS THERAPY IN RETROVIRAL DISEASE PATIENTS

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INTRODUCTION: Isoniazid prophylaxis therapy (IPT) is a proven intervention to prevent tuberculosis (TB) among retroviral disease (RVD) patients. The implementation of IPT is recommended by the Ministry of Health Malaysia since 2012. However, there are few data in local setting regarding this implementation and its effectiveness.
OBJECTIVE: To measure the level of uptake of IPT and TB incidence after the completion of IPT.
METHODS: A retrospective observational study was conducted in Infectious Disease Clinic, Hospital Tuanku Ja'afar, Seremban, Negeri Sembilan. All 289 patients were screened through medical documents between November 2011 and May 2015. 123 patients who received oral isoniazid 5mg/kg daily as isoniazid prophylaxis therapy (IPT) were selected. TB incidence was calculated in person-years using Cox regression analysis.
RESULTS: A total of 123 patients (42.6%) received IPT out of 289 RVD patients between November 2011 and May 2015. 78% reported completion of 6-months IPT. The overall TB incidence was 2.2 per 100 person-years (95%CI: 2.05-2.35). Patients who initiated IPT before antiretroviral therapy had TB incidence of 14 per 100 person-years while those who initiated IPT after antiretroviral therapy was 1.6 per 100 person-years (p=0.0251).
CONCLUSION: IPT may be beneficial among RVD patients in preventing incidence of TB especially after or during antiretroviral therapy has been started.

MPSPSC2017000043 (Oral)
STATINS EFFECTS ON CATARACT AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS

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INTRODUCTION: Cataract is the leading cause of poor vision and blindness worldwide. The effects of statin administration on cataract remain unclear.
OBJECTIVES: To evaluate the prevalence of cataract and to determine whether statin use affects the risk of cataract development among outpatients with Type 2 diabetes mellitus in Hospital Pulau Pinang, Malaysia.
METHODS: This is a retrospective cohort study of 717 diabetic outpatients (559 statins user with age (58±11.9) and 158 statins non-users with age (45.2±18.1). Clinical data, demographic criteria, medications and confirmed diagnosis of cataract were collected**.**
RESULTS: The age of 717 subjects was (55.2±14.9) years and females 367(51.2%). Malay was 268(37.4%), Chinese 255(35.6%) and Indian 194(27.1%). Cataract was diagnosed in 303(42.3%) patients with age (60.5±13.8) years. Cataract distribution among treatment and control group was 255(45.6%) and 48(30.4%) cases respectively. About 172(46.9%) of female and 131(37.4%) of the male had a cataract. While, 112(41.8%) Malay, 117(45.9%) Chinese, and 74(38.1%) Indian subjects developed a cataract. The relative risk (RR) for cataract due to statin usage is 1.5, and excessive relative risk (ERR) is 50%. The absolute risk (AR) is 15.2% and number need to harm (NNH) is 7. Chi-square, Spearman's correlation test (P-value: 0.001), and multinomial logistic regression test indicated a significant statistical association of statins use and cataract incidence (P-value: 0.002).
CONCLUSION: More than one-third of cases had a cataract. Statin users' cohort had a higher risk of cataract incidence than statin non-user group. Female and Chinese had increased risk of cataract than male, Indian and Malay.

MPSPSC2017000045 (Oral)
THE EQUIVALENCE BETWEEN THE MALAY AND UK ENGLISH VERSIONS OF MINI-ADDENBROOKE'S COGNITIVE EXAMINATION

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INTRODUCTION: The UK Version C (2014) of Mini-Addenbrooke's Cognitive Examination (M-ACE) is a very sensitive and specific tool for the detection of cognition impairment. It is particularly useful in differentiating mild cognitive impairment from dementia.
OBJECTIVES: To validate the reliability of the Malay (2016) version of M-ACE for detecting cognition impairment and measure its equivalence with the UK Version C (2014) English.
METHODS: A cross-sectional study design was conducted. M-ACE was done for 104, bilingual (Malay and English speakers) Malaysian outpatients with Type 2 diabetes mellitus at Hospital Pulau Pinang, Penang, Malaysia. Both the Malay Version (2016) and UK Version C (2014) instruments were administered to Reliability, test-retest, and equivalent forms. Reliability tests were done for the five domains of each of the two versions. To further assess of equivalence, the mean scores of five scales of the two versions were calculated and compared.
RESULTS: From 104 consenting participants, 63(60.6%) were males. The mean age of participants was 58.9±10.8 years. The majority of contributors were Indian 38(36.5%), followed by Malay 37(35.6%) and Chinese 29(27.9%). The reliability of M-ACE Malay version was very good (Cronbach's α-coefficient =0.839). Student t-tests showed non-significant differences between the mean scores obtained from the two versions for each of its five domains.
CONCLUSIONS: The UK English and Malay-language versions of the M-ACE indicated equivalence in bilingual Malaysian diabetic outpatients. The findings recommended that the Malay and UK English versions can be used interchangeably in further studies for patients who speak either English or Malay languages.

MPSPSC2017000048 (Oral)
HALAL GUIDE ON THE USE OF PHARMACEUTICAL INTOXICANTS IN MEDICINES

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INTRODUCTION: Currently, there is no halal guide on the use of pharmaceutical intoxicants in medicines. The National Fatwa committee of Malaysia has a halal guide on the use of alcohol in food based on the input from Universiti Putra Malaysia's food expert and was published in 2011. This guide was also extended to include medicines and perfumes. As such, it is important for pharmacists as guardians of medicines to be in the fore-front to formulate a guide for this purpose.
OBJECTIVE: To formulate halal guide on the use of pharmaceutical intoxicants in medicines.
METHODS: On 22nd May 2017, Inhart and MPS co-organised a half-day stakeholders meeting to discuss and formulate the guide. The stakeholders consist of the Ministry of Health, Jakim, Ministry of Defence, HDC, IIUM, USM, UM, UPM, CUCMS and industry.
RESULTS: Based on one of the Pillars of Syariah (Maqasid Shariah) concerning preservation of life, medicines that have al-khamr or intoxicating properties are permissible (halal) to be used for Muslim patients. These medicines also known as pharmaceutical intoxicants can be used based on their approved prescribed dosage upon registration with the National Pharmaceutical Regulatory Agency (NPRA), Ministry of Health Malaysia for quality, safety and efficacy. Pharmaceutical intoxicants such as ethanol, anesthetics, analgesics, anticonvulsants, anti-parkinson, anti-depressions, anxiolytics, antipsychotics and hypnotics are psycho-active drugs for various types of treatment.
CONCLUSION: Drug companies as far as possible should avoid the use of ethanol in their oral products such as cough mixtures. The prescribed dose for these products shall be approved by NPRA. The guide will include food-drug interphase products and will be forwarded to Jakim for further action.

MPSPSC2017000049 (Oral)
SINGLE DOSE VERSUS MULTIPLE DOSES OF ANTIBIOTIC PROPHYLAXIS IN CAESAREAN SECTION: PROTOCOL FOR A SYSTEMATIC REVIEW AND META-ANALYSIS OF AFRICAN STUDIES

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INTRODUCTION: Caesarean section is associated with 5 – 20 fold increase risk of postpartum infections compared to vaginal delivery and antibiotic prophylaxis reduced such infections. Evidence from meta-analyses demonstrates that single dose of antibiotic prophylaxis is not inferior to multiple doses in reducing infectious morbidity in caesarean section. However, African studies are underrepresented in these meta-analyses. In addition, Obstetrician argued that African Hospitals are different, in terms of microbial contamination, from hospitals in other parts of the world. Furthermore, African studies comparing single dose to multiple dose of antibiotic prophylaxis have reported conflicting results.
OBJECTIVES: To determine the optimal duration of antibiotic prophylaxis in caesarean section by comparing single dose and multiple doses interventions.
METHODS: Electronic search of Pubmed and Scopus databases with World Health Organization and Pan African Clinical trial registry would be conducted to identify eligible studies. Only Randomized Control Trials conducted in Africa that compared single dose and multiple doses of antibiotic prophylaxis in caesarean section (elective and emergency) would be included. A standardized data collection sheet would be used for data extraction. Risk of bias of the included studies would be assessed using Cochrane risk of bias tool. The primary outcome is composite infectious morbidity of the secondary outcomes; endometriosis, wound infection and urinary tract infection.
DATA ANALYSIS: Statistical analysis will be performed using REVIEW MANAGER (RevMan) version 5.3. Pooled studies will be analysed using random-effect model and binary outcomes will be presented as summary risk ratio with 95% confidence interval.

MPSPSC2017000050 (Oral)
PHARMACOMETRICS MODELLING OF THE NATURAL DIABETES DISEASE PROGRESSION AND LIFESTYLE INTERVENTION EFFECTS ON WEIGHT, BETA CELL FUNCTION AND INSULIN SENSITIVITY IN INDIVIDUALS WITH IMPAIRED GLUCOSE TOLERANCE

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INTRODUCTION: Pharmacometrics modelling is an interesting method used in quantifying diabetes disease progression.
OBJECTIVES: The objective of this study was to characterise and quantify the effect of natural disease progression in comparison to lifestyle intervention on body weight, insulin sensitivity and beta cell function among individuals with impaired glucose tolerance (IGT), applying the weight-HbA1c-insulin-glucose (WHIG) model.
METHODS: The data from Finnish Diabetes Prevention Study with yearly weight, fasting plasma glucose, fasting serum insulin, and glycated haemoglobin values for six years, were used in the study. A total of 522 subjects with IGT were randomized into control and intervention groups. The WHIG model was used to fit the data from baseline until the sixth year, using NONMEM.
RESULTS: At the end of the study, 0.9% and 4.1% reduction of weight were recorded in the control and intervention groups, respectively. Insulin sensitivity increased on average from 63.2% of normal to 69.0% in the control group and from 63.7% of normal to 77.9% in the intervention, mainly due to weight change. For beta cell function, the baseline value was 50.1% and 51.7% of normal for the control and intervention groups, respectively, and decreased to 41.1% and 40.1% of normal. A fundamental disturbance in the beta cell function among prediabetics may cause the reduction of beta cell function. A 0.4% decrease of postprandial glucose input was recorded with the total effects of natural disease progression and lifestyle intervention.
CONCLUSION: In conclusion, effective weight reduction and insulin sensitivity improvement were achieved with lifestyle intervention.

MPSPSC2017000051 (Oral)
PERSONALISATION OF ASPIRIN THERAPY: A FOCUS ON GASTRIC TOXICITY

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INTRODUCTION: The use of aspirin (75-325mg) has become the cornerstone of secondary prevention in coronary heart disease. It has been proven to reduce the risk of new atherothrombotic events by 25–30% through platelet inhibition. Despite its demonstrated beneficial effects, it is also well documented that it causes damage to the gastrointestinal (GI) tract. However, the reasons why some people develop serious lesions, whereas most only have minor but clinically important lesions are poorly understood. Therefore, concern about development of GI toxicity, especially bleeding remains a major factor limiting the widespread use of aspirin. GI symptoms also serve as a major cause of discontinuation or non-adherence to therapy in some patients, thereby leading to treatment failure and presumed aspirin resistance.
OBJECTIVES: This study aims to illustrate and classify aspirin-induced GI toxicity in rats, which serves as a prelude to the discovery of new biomarkers for aspirin-induced GI toxicity.
METHOD: Thirty-two (32) Sprague-Dawley rats were given 10.41mg/kg aspirin for 4 weeks, sacrificed and their stomachs examined macroscopically for GI toxicity using stereomicroscope.
RESULTS: Twenty (62.5%) of the rats developed a gastric toxicity. The toxicities were neither regular in shape nor frequency. They presented as either red streaks, petechiae, haemorrhagic/non- haemorrhagic erosions or ulcerations. They were all confined to the acid-producing glandular mucosa and were mostly small in nature.
CONCLUSION: Our study clearly depicts gastric toxicity to aspirin. The task ahead is the NMR-based pharmacometabonomic analysis of the biofluids to identify biomarkers that may be linked to the gastric toxicity.

MPSPSC2017000056 (Oral)

DESIGN AND EVALUATION OF SELF EMULSIFYING SOLID DISPERSION OF ETHANOL EXTRACT OF MORINGA LEAVES AND ASSESSMENT OF ANTI-INFLAMMATORY, ANTI-NOCICEPTIVE AND ANTI-RHEUMATOID ARTHRITIS ACTIVITY

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INTRODUCTION: Rheumatoid arthritis (RA) is a chronic systemic inflammatory disorder affecting 0.5 to 2% of the population. Available RA medications associated with serious adverse effects, low rate of response and/or high cost. Traditional medicine using botanical natural products, like Moringa oleifera Lam, provide an attractive alternative. Unfortunately, many traditional medicinal uses of plants lacks for scientific evidences supporting the claimed use and available commercial products are non-standardised.
OBJECTIVES: To evaluate the anti-inflammatory, anti-nociceptive and anti-arthritic activities of ethanol extract Moringa leaf and formulated dosage form. In addition to that, this study aimed to formulate and evaluate a standardised oral dosage form.
METHODS: Carrageenan-induced paw oedema and complete Freund's adjuvant (CFA)-induced rheumatoid arthritis in Sprague-Dawley male rats was used as disease model. The anti-nociceptive activity was evaluated in both normal and arthritic animals using Eddy's hot plate and tail-flick method. A self emulsifying solid dispersion was designed. For evaluation of the dosage form, a HPLC-UV method was developed.
RESULTS: A significant analgesic activity and reduction in inflammatory oedema were detected for both crude extract and formulated dosage form. Data obtained give potential evidence of effectiveness in prevention of RA. Gelucire 50/13 and HPMC were successfully used in formulation of standardised dosage form.
CONCLUSION: Ethanol extract of Moringa leaves showed a promising bio-efficacy against RA. The evaluation of the formulated dosage form identified that gelucire 50/13 and HPMC solid dispersion was an effective approach for production of standardised oral dosage.

MPSPSC2017000060(Oral)

COMPATIBILITY STUDIES OF TRICLOSAN AND FLURBIPROFEN WITH FORMULATION EXCIPIENTS: A SYSTEMATIC DRUG-DRUG AND DRUGS-EXCIPIENTS COMPATIBILITY SCREENING

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INTRODUCTION: Triclosan (TCS) is a broad spectrum antimicrobial agent that has been found effective in the treatment of periodontitis. Flurbiprofen (FLB) is an analgesic that has been found efficacious when used as a topical or systemic medication for dental pains. The clinical effectiveness of these drugs in the treatment of periodontitis are limited by their poor aqueous solubility. As a solution, a novel nanogelformulation of these drugs using a poly-ε-caprolactone (PCL) and chitosan (CS) polymers is proposed herein. However, a combination of incompatible chemical components may result in interactions, hence the need for compatibility screening.
OBJECTIVES: To assess the compatibility of triclosan-flurbiprofen, and the drug duo against selected excipients used in the fabrication of nanogel formulation.
METHODS: The compatibility studies were conducted by isothermal stress testing followed by evaluations of organoleptic parameters, HPLC, Fourier–transform infrared (FT-IR) spectroscopy, differential scanning calorimetry (DSC) and X-ray powder diffraction (XRPD).
RESULTS: No notable changes were observed after organoleptic evaluations. The results of FT-IR, DSC and XRPD showed lack of interactions between the selected drugs and excipients. Following the HPLC analysis, retention times of FLB and TCS were found to be 10.1 min and 12.5 min and that of CS and PCL was 7.8 min and 9.2 min, respectively. All the peaks were distinct and no interference was observed in the chromatograms.
CONCLUSION: The study showed that TCS and FLB are compatible with each other and with the selected excipients for nanogel formulation.

MPSPSC2017000065 (Oral)
BONE MINERAL DENSITY AMONG POSTMENOPAUSAL MALAY WOMEN

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INTRODUCTION: In Malaysia, there is lack of information regarding bone mineral density (BMD) among Malays especially for postmenopausal women. Poor BMD leads to weaker bones and are more likely to break (fractures). As a person age, further bone loss can lead to osteoporosis.
OBJECTIVES: This research was carried out to identify the BMD among postmenopausal Malays women, its relationship to lifestyle and other determinants that cause low bone density. BMD was determined by using quantitative ultrasound (QUS) at the calcaneal part of the feet. Anthropometry, lifestyle behaviour and family history were also determined by using questionnaires adopted from many sources including International Osteoporosis Foundation.
RESULTS: From the study, 67 Universiti Teknologi MARA (UiTM) staffs were recruited with a mean age 53.24 ± 0.77 years. Subjects were all Malays, females and post menopause. Majority of the subjects studied reside in rural areas and fall in the lower income groups. Detail results showed that 37.3% have normal bone densities, followed by 47.8% had osteopenia and 14.9% had osteoporosis. There were no significant difference of BMD to variables such as body mass index (BMI), total body fat, exposure to sunlight, breakfast frequency, calcium supplement intake, milk intolerance, and caffeine intake and exercise frequency. The study found that family history has a significant influence on BMD.
CONCLUSIONS: The study cohort revealed that most of the postmenopausal women were from low income background families, but practise active and healthy lifestyles. This group did not take any commercial supplements every day.

MPSPSC2017000066 (Oral)
A QUALITATIVE STUDY INVESTIGATING MEDICATION SAFETY ISSUES EXPERIENCED BY COMMUNITY PHARMACISTS

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INTRODUCTION: Medication safety issues (MSIs) are widespread and rather understudied in the primary care setting of Malaysia. Malaysia has experienced a 20% increase in adverse drug reactions reporting in the past three years with many resulting from MSIs. This illustrates the importance of investigating how MSIs occur.
OBJECTIVES: The study aims to investigate the MSIs present in the primary care setting of Malaysia from the perspective of the community pharmacists and their causative factors.
METHODS: A qualitative phenomenological approach was used involving face-to-face, semi-structured interviews with 19 community pharmacists (CP) in Klang Valley, Malaysia. By utilising purposive sampling the participants were recruited by telephone. Interviews were audio recorded, transcribed verbatim and thematically analysed.
RESULTS: The main themes were medication safety issues caused by the present healthcare system, community pharmacists and patients. Existence of strong competition between GPs and CPs due to a lack of dispensing separation creates inadequate communication and coordination within the healthcare system. CPs contribution to MSIs includes dispensing prescription medicines without prescription. CPs experienced a language barrier with patients that affect their counselling with them and the understanding of their patients on medication labels and adherence.
CONCLUSIONS: The CPs provided an important insight into the causative factors of MSI. Combining this with the perspectives of other stakeholders of healthcare will assist in developing future regulatory changes that aim to alert contributors of the MSIs, importance of preventing them and modify the conditions which facilitate their existence.

MPSPSC2017000067 (Oral)
EMERGING ROLES OF PHARMACISTS IN GLOBAL HEALTH: PERSPECTIVES FROM THE ASIA PACIFIC REGION

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INTRODUCTION: There are rapid changes in the roles of Pharmacists in the global health arena imperative for the realization of sustainable development goals. As one of the most accessible healthcare providers in a community, it is evident in multiple facets of global health practices, research, regulatory health policies etc.
OBJECTIVE: The study aims to explore the awareness on contemporary roles of pharmacists in different practice settings responding to their emerging roles in the global health arena.
METHODS: A descriptive cross-sectional study using validated questionnaire encompassing domains related with skills assessment on the role of Pharmacists in global health were used. Respondents were chosen from the 1st and 2nd Global Health Pharmacy Certificate Courses held in Malaysia and the Philippines, respectively. Participants were Pharmacists whose practice pattern range in diversity and settings from countries in the Asia-Pacific Region. A total of 398 survey questionnaires were analysed out of 500 who attended the course, yielding a return rate of 80%.
RESULTS: Results revealed that respondents are working as community pharmacists (53.5%), hospital pharmacists (32.2%), academe (4.5%) and others (9.8%). Respondents agreed that their emerging roles as pharmacists include skills on cultural sensitivity (57%), patient care (45.2%), healthcare accessibility (56.8%), clinical competency (51.3%), goal settings (53%), life-long learning (51%) and intra-disciplinary participation (38.9%).
CONCLUSION: Majority of the respondents agree of the crucial skills in the emerging roles of Pharmacists in the global health. Hence, more comprehensive efforts and sustainable programs such as Certificate Course and Global Health Pharmacy Network that respond to the emerging needs of the global society.

MPSPSC2017000069(Oral)
PARTICIPATION OF PRIVATE AND GOVERNMENT HEALTHCARE PROVIDERS IN SMOKING CESSATION SERVICES (MQUIT SERVICES)

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INTRODUCTION: In accordance to Framework Convention on Tobacco Control, Ministry of Health Malaysia has established the mQuit Services. This program aimed to increase access and quality of smoking cessation services provided by the healthcare providers (HCP) by integrating with the USM Tobacco Quitline (USMTQ).
OBJECTIVE: To describe the profile of HCP participated in the quitline services.
METHODS: The accredited HCP were given access to USMTQ system and clients' demographic and smoking history were documented into the system and referred to USMTQ into a series of customised and personalised telephone based consultation.
RESULTS: Within a year of inception, a total number of 369 HCP have been using mQuit Services of which 161 (43.3%) were from private HCP and the remaining (56.7%) were from government quit clinics. Selangor recorded the highest number of registered HCPs (n=106) with highest came from private sectors (66) and 40 from the government sector. The participation of HCPs in the mQuit services have resulted with a total number of 682 clients registered into its program and half of them (54.2%) were referred to USMTQ service for telephone consultation. Results also shown that government HCP referred more clients to USMTQ services compared to HCPs from private sector (57.4% vs 42.6% respectively).
CONCLUSION: HCP from both sectors supported and participated in the mQuit services. Hence, it is important for mQuit Services to increase participation of accredited HCP across the country in order to heighten the chances of smokers getting assistance through USMTQ.

MPSPSC2017000070 (Oral)

EFFECT OF 'EDUCATIONAL PAMPHLET' IN PREVENTION OF HUMAN PAPILLOMA VIRUS RELATED INFECTIONS AMONG YOUNG ADULT POPULATION

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INTRODUCTION: Knowledge on Human Papilloma Virus (HPV) infection is crucial to prevention of HPV related cancers. The intervention tool (Pamphlet) was developed, validated and translated to local Bahasa Malaysia language before use. Main Outcome Measures: Pre- and post-test at three time points to estimate knowledge gained and knowledge retained regarding HPV infection and vaccination was measured using 16 item knowledge assessment tool.
OBJECTIVE: The aim of this study was to estimate the effectiveness of educational pamphlet in HPV prevention among young adult students and general public.
METHOD: A prospective, longitudinal study was done using pre-validated questionnaire and convenience sampling. Percentage, frequency, median and IQR used for descriptive statistics whereas McNemar's and Wilcoxon test for inferential statistics using SPSS version 23.
RESULTS: The research findings showed a significant increase in knowledge gain (N = 942) with a knowledge score for pre- and post test were Mdn = 10 (IQR = 6) and Mdn = 14 (IQR = 2), $p < 0.001$) respectively, with a significant improvement of 4 points ($Z = 24.9$; $p < .001$). This reveals a poor knowledge among participants. At the three to six months post-test, Mdn = 14, (IQR= 2), with a significant improvement in knowledge score ($Z=24.7$; $p <.001$) from base line.
CONCLUSION: The educational protocol significantly increased knowledge about HPV infection and HPV vaccination, regardless of sociodemographic characteristics and risk behaviours. There was no significant change in knowledge observed after intervention between time lines.

MPSPSC2017000072(Oral)

RELATIONSHIP OF PATIENT CHARACTERISTICS AND ORGANIZATIONAL FACTORS WITH HEALTH CARE COLLABORATION AMONG TYPE II DIABETES PATIENTS IN PALESTINE

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INTRODUCTION: Comprehensive diabetes health care relies on health care collaboration that provides the opportunity for health care professionals and health care organizations to share information relevant to a diabetes management evaluation and progress toward appropriate health care service measures.
OBJECTIVES: The objectives of this study were to assess the health care collaboration and its relationship with patient characteristics and organizational factors in type II diabetes patients.
METHODS: A cross-sectional study was conducted. The health care collaboration scale was used to assess health care collaboration that included physician's referral to another facility specializing in advanced diabetes examination and/or treatment, referral to other different health care professionals for diabetes education and/or assistance, and diabetes health care home visits or phone consultations by health care professionals. All analyses were performed using SPSS v 16.0.
RESULTS: Three hundred thirty type II diabetes patients were enrolled. The mean age of participants was 60 ± 9.7 years; 51.2% were male. The mean ± SD total health care collaboration score was 1.6 ± 0.9, which was lower than average score (i.e. cumulative percentage=26.7%). After adjusting covariates using multiple linear regressions, residency place, body mass index, diabetes education from health care professionals, quality of follow–up and patient–health care professionals relationship are the variables that significantly and independently related to health care collaboration ($P <0.05$).
CONCLUSION: Health care collaboration were inappropriate, and the study is a preliminary indication that health care collaboration in Palestine leaves a great deal of room for research and improvement.

MPSPSC2017000074 (Oral)
THE EFFECT OF HIGH FAT DIET INTAKE ON BLOOD GLUCOSE LEVEL OF PREDIABETIC AND TYPE 2 DIABETIC RATS.

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INTRODUCTION: Type 2 diabetes mellitus (T2DM) is a metabolic disease where the body blood glucose is high due to insulin resistance. T2DM is primarily caused by unhealthy lifestyle. Diabetic patients are advised to change their diet. However, most patients in Malaysia were unable to abide since many of Malaysian delicacies were prepared with high fat content.
OBJECTIVES: This study aims to evaluate the effect of high fat diet intake on blood glucose level of prediabetic and type 2 diabetic rats as compared to normal rats.
METHOD: Rats were induced to prediabetes and diabetes states. They were separated into various groups. GA is normal rats fed with normal diet (ND) while GB is normal rats fed with high fat diet (HFD). GC is diabetic rats fed with ND, GD is diabetic rats fed with ND and treated with metformin, whereas GE is diabetic rats fed with HFD and GF is diabetic rat fed with HFD and treated with metformin. GG is prediabetic rats fed with ND while GH is prediabetic rats fed with HFD. The fasting blood glucose was monitored twice weekly for 6 weeks.
RESULTS: Blood glucose of GA and GB was low whereas high blood glucose was seen in GC and GE throughout the study. GD and GF, the blood glucose level was high initially but it dropped after the rats were treated with metformin.
CONCLUSION: There is no effect on blood glucose level after the rats were fed on high fat diet for six weeks.

MPSPSC2017000078 (Oral)
EFFECT OF EDUCATIONAL PAMPHLET REGARDING HUMAN PAPILLOMA VIRUS (HPV) INFECTIONS AND HPV VACCINATION: A KAP STUDY AMONG PARENTS WITH AGE ELIGIBLE CHILDREN FOR HPV VACCINATION

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INTRODUCTION: Parents play the vital role in vaccination decisions for their children. Globally, adolescents and young adults are at high risks for contacting HPV related diseases.
OBJECTIVES: To evaluate the effect of educational pamphlet in influencing Knowledge, Attitude and Practice (KAP) among parents.
METHODS: A prospective, longitudinal study using convenience sampling. The study was carried out by repeated measures of KAP at three time points. Descriptive and inferential statistics were done.
RESULTS: The overall response rate was 57%. The research findings showed significant differences ($p < .001$) between all sociodemographic variables and KAP scores except location. The Friedman test reported difference in median among the three phases, is significant $X2$ (2, N=858) = 602, $p < .001$ and the Kendall's coefficient of concordance, ($W = .32$) indicating fairly strong differences among the three phases. Friedman's mean rank of KAP score was 1.37, 2.41 and 2.22 ($p < .001$) respectively. The median KAP score difference at intervention was significantly greater than base line, $Z = 10.8$, $p < .001$. The post intervention was significantly greater than the median KAP score at base line, $Z = 18$, $p < .001$. Whereas, the median score difference at post intervention and intervention was not significant, $Z = .35$, $p = .73$.
CONCLUSION: The educational protocol significantly increased KAP scores about HPV infection and HPV vaccination, regardless of sociodemographic characteristics. Appropriate, well-structured educational materials can promote the understanding and acceptability of HPV vaccination.

MPSPSC2017000083 (Oral)
RESEARCH AND DEVELOPMENT OF SELF-EMULSIFYING DRUG DELIVERY SYSTEM FOR ENHANCED BIOAVAILABILITY OF CURCUMIN

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INTRODUCTION: Curcumin has been extensively investigated due to its positive efficacy in various disease conditions. However, the low clinical therapeutic efficiency of this compound is usually limited by its lipophilic nature which leads to poor solubility, limited intestinal absorption and eventually low bioavailability. Recently, curcumin has emerged to be a future nanomedicine for cancer. A study cited that antitumor activity of curcumin entails prolong exposure of the cancer cells to curcumin. Oftentimes, the desirable antitumor effect of curcumin is not obtained due to the short half-life of this compound.
OBJECTIVE: This study aimed to develop an efficient oral drug delivery formulation for the enhancement of oral absorption of curcumon.
METHODS: Firstly, an effective self-emulsifying drug delivery system will be designed. Emulsification system that has been developed in our lab. The optimised formulation will be characterised for its mean droplet size, physical and chemical stability. An in vivo study will be conducted using a rat model.
RESULTS: An optimised self-emulsifying formulation comprising of 3:2:5 w/w mixture of soya oil, PEG-400 and Cremophor EL loaded with 100 mg/g curcuma extract (which contains approximately 50 mg/g curcumin active) was found to have the most satisfactory in vitro performance with an average droplet size of 273.7 nm. The optimised self-emulsifying formulation is stable up to 6 months upon various storage conditions.
CONCLUSION: An in vivo study conducted using Sprague-Dawley rats shown that the oral bioavailability of curcumin was successfully enhanced by our optimised self-emulsifying formulation.

MPSPSC2017000084 (Oral)
***GYNURA CREPIOIDES* LEAVES EXTRACT: AN ANTIBACTERIAL STUDY**

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INTRODUCTION: Gynura crepioides (G. crepioides) is a spinach which is native to South-east Asia, specifically Indonesia. There are claims that many Gynura species has valuable medicinal potential such as antiviral, anti-inflammatory, anti-hyperglycaemic, anti-hypertensive, anti-hyperlipidemic, anti-carcinogenic, anti-oxidative, and anti-ulcerogenic activities. Although the G.crepioides species has claims suggesting its medicinal value, to date there is no report on the antibacterial efficacy of the plant.
OBJECTIVES: This study aimed to evaluate the in-vitro antibacterial potential of ethanolic (70%) extract of G.crepioides on selected bacterial strains.
METHODS: The extraction of phytochemicals was carried out by using ultrasound-assisted extraction (UAE) method for 60 minutes at 75 °C by using ethanol (70 %) as a solvent. The in-vitro antibacterial sensitivity assay for extract was conducted by well diffusion technique against Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Bacillus cereus, and Micrococcus luteus and results were recorded by measuring the Zone of Inhibition (ZOI). Additionally, the antibacterial potency assay was conducted on the sensitive bacterial strain to determine the Minimum Inhibitory Concentration (MIC) by using tetracycline as a positive control.
RESULTS: The results from antibacterial sensitivity test of the extract indicated that only Micrococcus luteus showed ZOI at 33.12 compared to Tetracycline (ZOI-56). The results from the antibacterial potency assay revealed the MIC at 6.25×10^{-3} g/ml.
CONCLUSION: The result obtained from this study demonstrates that Gynura crepioides has the potential to be explored as an antibacterial agent.

MPSPSC2017000085(Oral)
PHARMACOLOGICAL EVIDENCE FOR THE BLOOD PRESSURE LOWERING EFFECT OF *TAPINANTHUS GLOBIFERUS*

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INTRODUCTION: *Tapinanthus globiferus* (TG), known as mistletoe, is a parasitic medicinal plant with a documented folkloric use in treatment of cardiovascular related diseases like hypertension and atherosclerosis.
OBJECTIVE: The objective of this research is to provide in-depth pharmacological assessment on its antihypertensive efficacy and the putative mechanisms of actions involved.
METHODS: Six groups of male spontaneously hypertensive rats (SHRs) were orally administered with water, ethanolic, chloroform and petroleum ether extract (500 mg/kg/day) of *T. globiferus* while the positive control groups received Verapamil (15mg/kg) for 2 weeks. Vasorelaxant effect of extracts and fractions were evaluated on rat aortic ring preparations. Mechanism studies were conducted on aortic rings preparations pre-incubated with various antagonists like 1H-[1,2,4] oxadiazolo-[4,3-a]quinoxalin-1-one (ODQ 10 μM), sCG inhibitors; Nω-Nitro-*L*-arginine methyl ester hydrochloride (L-NAME 10 μM) a nitric oxide synthase (NOS) inhibitor; Atropine (10 μM), a cholinergic receptor blocker; indomethacin (1μM), a cyclooxygenase inhibitor and various k^+ channel blockers such as Tetraethyl ammonium (TEA 10 μM).
RESULTS: Invasive intravenous and non-invasive oral administration of the extracts exhibited a dose-dependent significant decrease in the blood pressure with the ethanol extract being more potent. All extracts and fractions (0.125 - 4mg/ml) also gave a concentration-dependent vasorelaxation ($p<0.05$) on pre-contracted aortic rings.
CONCLUSION: The mechanism studies from this study suggests that *T. globiferus* exerts an endothelium-independent vasodilation via calcium channels blockade, direct activation of soluble Guanylate Cyclase and possibly by also inhibiting the formation of inositol 1, 4, 5-triphosphate.

MPSPSC2017000092 (Oral)
SHARED-FEATURE PHARMACOPHORE MODEL OF PHOSPHODIESTERASE10A INHIBITORS

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INTRODUCTION: Phosphodiesterase10A (PDE10A) is a dual-substrate enzyme that catalyses the inactivation of cAMP and cGMP and is expressed most prominently in the striatum. The inhibition of PDE10A results in the elevation of cAMP and cGMP, activating the direct and indirect pathways in striatum. Activation of these pathways provides significant improvement of positive, negative and cognitive symptoms of schizophrenia. The available drugs provide relief from the positive symptoms of schizophrenia but they do not improve the negative or cognitive symptoms. The existing drugs have serious side effects that impacts the patient adherence to the treatment. Thus, the understanding of the structural features of PDE10A inhibitors is important for further discovery efforts.
OBJECTIVES: The objective of the study was to develop a shared feature pharmacophore model for PDE10A inhibitors and validate the developed pharmacophore.
METHODS: LigandScout 4.1 was used to generate structure-based pharmacophore using PDE10A structure (PDB ID: 5C1W) and pharmacophore-features for 8 known PDE10A inhibitors. Structure-based pharmacophore models obtained for the PDE10A structure and the pharmacophore-features of known PDE10A inhibitors were then used to obtain a shared-feature pharmacophore model.
RESULTS: The best shared-feature pharmacophore consists of three features: hydrophobic unit, aromatic ring and hydrogen-bond acceptor. The generated pharmacophore successfully identified the active compounds in the decoy set.
CONCLUSION: Shared-feature pharmacophore was generated using a structure-based pharmacophore and pharmacophore features obtained from known PDE10A inhibitors. The validation was performed by decoy set screening. The validated pharmacophores will be used for screening of small-molecule databases in further studies.

MPSPSC2017000099 (Oral)
KNOWLEDGE AND ATTITUDE TOWARDS ANTIBIOTIC USAGE AMONG GENERAL PUBLIC IN KUALA LUMPUR, MALAYSIA

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INTRODUCTION: The emergence of superbugs and bacterial resistance to antibiotics is a growing problem worldwide. This circumstance is an alarming to public health globally in the 21st Century. Thus, public knowledge and attitude towards antibiotic usage play an important role in the success of treatment process and prevent from antibiotic resistance.
OBJECTIVES: This study aimed to evaluate public knowledge and attitude towards antibiotic utilization and the association of knowledge across various socio-demographic variables.
METHODS: A cross-sectional study with self-administered questionnaire was distributed in a convenience sample of 380 respondents from Kuala Lumpur.
RESULTS: Majority (60.8%) of respondents possessed moderate level of knowledge of antibiotic usage. Most (73.7%) of the respondents knew antibiotic is used for bacterial infection. However, 19.2% of respondents misunderstood that antibiotics is indicated for viral infection. About 53.4% of the respondents were aware of antibiotic ineffectiveness in relation to overuse of antibiotics. With regard to attitude, 51.1% believed that taking antibiotics when having cold symptoms could help to get better more quickly, while 21.9% expected antibiotic to be prescribed for common cold symptoms. More than 50% stated that they keep stock of antibiotics at home in case of emergency. Surprisingly, 65.3% agreed that they will use leftover antibiotics for respiratory illness (running nose, sore throat, flu). No significant association were observed between socio-demographic characteristics with knowledge of antibiotic usage.
CONCLUSION: Educational campaigns are needed to stress out the importance of correct usage of antibiotics among general public.

MPSPSC2017000100 (Oral)
MOISTURE SORPTION ANALYSIS OF *HIBISCUS SABDARIFFA L.* SPRAY DRIED EXTRACT

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INTRODUCTION: Solid pharmaceutical ingredients can sorb moisture during processing and can cause adverse effects on their stability. These unwanted effects could be physical implications such as variation in dissolution rate and water content, crystallization of components and powder caking. Chemical reactions, like hydrolysis and oxidation, could also be accelerated by water uptake. Therefore, identifying the moisture affinity of the ingredient(s) is mandatory.
OBJECTIVES: To assess moisture sorption properties of spray dried extract of the Hibiscus sabdariffa to know the degree of its hygroscopicity.
METHODS: Desiccator method was employed with saturated salt solutions to provide a range of relative humidities from 33% to 75%. An excessive amount of each salt namely, Magnesium Chloride (33%), Potassium Chloride (43%), Magnesium Nitrate (53%) and Sodium Chloride (75%) dissolved in distilled water, and the saturated salt solution positioned in the well of the desiccator. Accurately weighed samples of the extract placed in the desiccators, and the samples were periodically withdrawn and reweighed until an equilibrium weight attained.
RESULTS: The extract showed excessive moisture sorption in all cases except 33% RH. The extract sorbed 9.24±0.40% and 9.96±0.72% moisture at 43% and 53% RH respectively and deliquesced at 75% RH after 24 hrs. Conversely, at 33% RH the moisture sorbed was <1% which is considered safe for processing and storage.
CONCLUSION: This study found that the tested extract is highly hygroscopic, 75% RH identified as critical relative humidity (RH0) and the extract can safely be processed in relative humidity of <33%.

MPSPSC2017000102 (Oral)

COMPUTER ASSISTED DESIGN, SYNTHESIS AND ACETYLCHOLINESTERASE INHIBITORY ACTIVITY OF SOME INDOLE DERIVATIVES TARGETING ALZHEIMER'S DISEASE

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INTRODUCTION: Alzheimer's disease is the most common form of dementia in elderly population. Alzheimer's disease has been characterized as chronic neurodegenerative disorder that slowly destroys human brain cells. The classic signs found in the Alzheimer's disease includes progressive loss of the neurons function and decrease level of neurotransmitters, mainly acetylcholine which lead to memory loss and impaired cognition. According to existing guidelines, acetylcholinesterase inhibitors are the first-line agents for the treatment of mild and moderate Alzheimer's disease. Extensive literature review revealed that, indole-based heterocyclic compounds were found to be effective acetylcholinesterase enzyme inhibitors. Some studies also concluded that indole amide compounds possess good acetylcholinesterase enzyme inhibitory activity.
OBJECTIVES: In this context the present study involves the design of 42 novel indole-based amide compounds as potential acetylcholinesterase inhibitors.
METHODS: Molecular docking study was performed to determine the interactions that formed between the proposed compounds with 3D X-ray crystal structure of acetylcholinesterase enzyme. Physiochemical features of designed compounds were determined by using OSIRIS calculation. Based on these two results eleven compounds which predicted good acetylcholinesterase enzyme inhibition were selected. Selected indole-based amide compounds were synthesized by following standard acid amine coupling method, using HATU as coupling reagent. The compounds synthesized were characterized using standard physical and analytical techniques. The synthesized compounds were evaluated for their acetylcholinesterase inhibitory activity by using modified Ellman's method.
RESULTS: Among the eleven synthesized compounds, four compounds exhibited around 50% of acetylcholinesterase enzymes inhibitory activity at the concentration .of 0.11µM, 0.16µM, 0.14µM and 0.13µM.
CONCLUSION: Indole-based amide compounds are have the potential to be used for Alzheimer's disease based on their displayed acetylcholinesterase inhibitory activity.

MPSPSC2017000103 (Oral)

EVALUATION OF ANTIMICROBIAL STEWARDSHIP PROGRAMS IMPLEMENTATION AND OUTCOMES USING INTERRUPTED TIME SERIES ANALYSIS, IN A SELECTED HOSPITAL AT MAKKAH, KINGDOM OF SAUDI ARABIA

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INTRODUCTION: Antimicrobial therapy for management of severe infections among critically ill patients is challenging due to unstable hemodynamic status of patients. Antimicrobial stewardship program is a collaborative effort to optimize antimicrobial use in health care institutions through evidence based quality improvement strategies.
OBJECTIVE: The aim of this research was to evaluate the impact of Antimicrobial Stewardship Programs (ASP) implementation in a critical care setting for improving antimicrobial use, cost and clinical outcomes at selected hospital at Makkah region, Kingdom of Saudi Arabia.
METHODS: A controlled interrupted time series analysis was used to compare outcomes in the 9 months before and after ASP implementation.
RESULTS: Mean total monthly antimicrobial consumption measured as defined daily dose (DDD) per 100 bed days was reduced by 25 % (742.86 vs. 555; P=0.) as compared to control group by 7 % (35 vs 38; P=0.735). Total antimicrobials cost measured as total mean cost per 100 bed days was increased by 55% (38723 Vs 87552; P=067). The use of IV Ceftriaxone measured as defined daily dose per100 bed days was decreased by 82 % (94 vs 17; P= 0.008).,
CONCLUSION: Overall, based on the present study findings, involvement of higher administration in multidisciplinary ASP committees, daily audit & feedback by clinical pharmacist and physicians with infectious diseases training and support from intensive care team are key sets of recommendations that can be made to enhance quality use of antibiotics in Saudi healthcare institutions.

MPSPSC2017000104 (Oral)

EVALUATION OF ILLNESS PERCEPTIONS AND THEIR ASSOCIATIONS WITH GLYCAEMIC CONTROL IN TYPE 2 DIABETES MELLITUS PATIENTS AT HOSPITAL PULAU PINANG

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INTRODUCTION: Malaysia has a high prevalence of diabetes at 16.6% and suboptimal glycaemic control with only 22% meeting HbA1C target of < 7%. Illness perceptions involve coping strategies and behavioural responses that could affect glycaemic control.
OBJECTIVE: Evaluation of illness perceptions and their associations with glycaemic control.
METHODS: A cross-sectional study was conducted in a purposive sample of 384 patients using Revised Illness Perception Questionnaire and 8-Item Morisky Medication Adherence Scale.
RESULTS: The patients' median age was 58.1 years and median duration of diabetes was 13 years. 44.3% were males, whereas 55.2% were females. The study consisted of 38.8% Malays, 31.0% Chinese, 28.9% Indians and 1.3% other ethnic groups. 75.5% of patients had poor diabetes control and 44% of patients had low adherence to diabetes medication. The median score of illness perception dimensions for timeline (acute/chronic), consequences, personal control, treatment control, illness coherence, timeline cyclical and emotional representations was 23, 18, 22, 18, 19, 12 and 14, respectively. The higher scores on timeline indicate strongly held beliefs about the chronicity of the disease, whereas high personal control indicates positive beliefs about the controllability of diabetes. Timeline cyclical and emotional representations were significantly associated with glycaemic control with p values of 0.041and 0.032, respectively.
CONCLUSION: Timeline cyclical and emotional representations dimensions of illness perceptions have significant associations with glycaemic control; therefore further studies should be conducted to establish exact relationships for concrete recommendations to improve psychosocial management of diabetes.

LIST OF POSTER PRESENTATIONS

No	Presenting Author	Title
014	Hadi H	Skin Lightening Effect of Seaweed Gel Formulation: An *In vivo* Study
018	Yow HY	The Effects of Curcumin in Neurotransmitter Signalling in Kainate Model of Epileptic Rats
019	Rajavel V	Design, Optimization, Formulation and Evaluation of Edaravone Nanoparticles Using Box-Behnken Design Surface Response Methodology
020	Lim KC	Initiatives Improving Documentation and Communication of Patient's Drug Allergy in a Private Hospital Setting
021	Zamery MI	Fabrication of Face Cream Containing Enriched Fraction of Protocatechuic Acid from *Clinacanthus nutans (C. nutans)* Leaves
023	Tey MN	The Evolution and Expansion of Clinical Pharmacy Service and Its Impact in a Private Hospital Setting
025	Hassan IH	Drug-Excipient Compatibility Testing for a Fixed-Dose Gabapentin-Carbamazepine Capsule
026	Wong YY	Clinical Audit on Inhaler Technique among Hospital Serdang Adult Patients
027	Mohd HN	Formulation and Characterization of Cosmetic Cream Incorporating *Piper betle Linn.* Extract
031	Thong LM	Effect of Combination of Superdisintegrants on the Physical Properties of Orally Disintegrating Tablets
033	Syed OSS	Pre-Scale Up Formulation of Halal Skin-Lightening Cream Containing *Piper betle L.* Extract
035	Sellappans R	Pilot Testing of the Physician-Pharmacist Partnership for Patient Safety Intervention
040	Naeem HK	Screening of *Punica granatum* Seeds for Antibacterial and Antioxidant Activity Against Various Extracts
041	Ngadimon IW	Development of Shared Decision Making Aid Tool for the Use of Pharmacists in Cases of Antibiotic Treatment in Respiratory Tract Infection among Adolescents
044	Al-Nema M	Ligand-Based Pharmacophore Modelling of Phosphodiesterase 10A Inhibitors
046	Farhan AB	The Dissolution Performances of Flurbiprofen Solid Dispersion Systems
047	Al-Shami AKM	Knowledge, Attitude and Practice of Medical and Health Sciences Students at IIUM Towards Zika Virus

052	Iqbal MZ	Knowledge, Attitude and Practice of Mental Health Disorder among Healthcare Students of Medicine, Pharmacy and Dentistry in a Private University in Kedah, Malaysia
053	Iqbal MZ	Knowledge and Perception of Health Care Students of a Malaysian Private University about Ebola Virus Disease (EVD)
054	Razali MF	Trend of Pharmaceutical Products Poisoning Cases Reported to the National Poison Centre of Malaysia from 2006 To 2015
055	Fatokun O	Factors Associated With Consumer Spending on Herbal Products among the General Public in Kuala Lumpur, Malaysia
057	Sha'aban A	Drug Utilisation and Associated Adverse Drug Events in Hypertensive Patients at a Tertiary Healthcare Facility in South-West Nigeria
058	Prajapati SK	Measurement of Effect of Spironolactone Patients with Rheumatoid Arthritis
059	Jimam NS	Uncomplicated Malaria Diagnostic and Treatment Practices in Primary Health Care Facilities of Plateau State, Nigeria: A Retrospective Study
061	Tan CS	Vasorelaxation Effect of *Glycyrrhizae uralensis* Through the Endothelium Dependent Pathway
063	Ch'ng YS	Vasorelaxant Properties of *Vernonia amygdalina* Ethanol Extract and Its Possible Mechanism of Action
064	Ng CH	Overview of Signalling Mechanism Pathways Employed by BPaid in Vasodilatory Activity
068	Iqbal Z	Vasorelaxant Activities and Underlying Pharmacological Mechanisms of *Gynura procumbens Merr.* Leaf Extracts in Isolated Rat Thoracic Aorta
071	Pathmapiriyaa M	Quality of 'Educational Intervention Tool' in Prevention of Human Papilloma Virus Infection among Parents
073	Teh YH	Isolation and Purification of Bioactive Protein(S) with Anti-Breast Cancer Property from *Gynura procumbens (Lour.) Merr.* Extract
075	Ng SY	Paediatric Pharmacist: Our Journey and Milestone
076	Che Yaacob NL	A Preliminary Study: Consumer Satisfaction Towards Accessibility and Pharmaceutical Care in Malaysia Community Pharmacies
077	Che Yaacob NL	Knowledge and Attitude Towards Antibiotic Use among Public in Alor Setar, Kedah
079	Ali AN	Development, Translation and Validation of Adults KAP Survey Questionnaire Regarding Prevention of Human Papilloma Virus Infection and HPV Vaccination
081	Raman W	An Assessment of Knowledge of Smoking Cessation among Final Year Pharmacy Students in Malaysia
082	Jimam NS	Adjunct Medications in Uncomplicated Malaria Management and Their Direct Cost Implications on Patients: A Case Study of Primary Health Care Facilities in Plateau State, Nigeria
086	Siddalingam R	Self-Nanoemulsifying Drug Delivery Systems of Dutasteride: Development and *In vitro* Characterization
087	Bangash NSA	Impact of Platinum Based Therapy and Non-Platinum Based Therapy on Survival in Malaysian Patients with Advanced Non-Small Cell Lung Cancer
088	Bangash NSA	Does EGFR Mutation Influence Survival Outcomes Following First-Line Gefitinib Therapy in Malaysian Patients with Advanced Non-Small Cell Lung Cancer Patients?

089	Raman W	Adherence to Topical Corticosteroid Use among the Public in the Community Pharmacy Setting in Seberang Perai Selatan, Penang
091	Bangash NSA	Incidence of Treatment-Related Side Effects in Non-Small Cell Lung Cancer Patients Receiving Platinum Therapy at a Public Tertiary Care Hospital
093	Kool N	High Performance Liquid Chromatography of Newly Synthesized Prodrugs of Aceclofenac
094	Tey KK	Knowledge and Use of Antibiotics among the Public in the Klang Valley
095	Al-Samarrai EM	Cholinesterase Inhibitory-Guided Fractionation and Isolation of Bioactive Compounds from *Tinospora crispa* and *Melastoma malabathricum*
096	Tey KK	Disposal Practices of Medication in Community Pharmacies in Malaysia
097	Negi JS	A Novel Controlled Ionic Gelation Method for Development of Chitosan Nanoparticles
098	Tey KK	Utilisation of Community Pharmacy Services by the Public in Klang Valley
101	Hussin SN	Awareness Level on Mental Illness among Students in Institutions of Higher Learning in Ipoh
105	Dahlan AFM	Contribution of Carbohydrate Intake to HbA1c in Type 2 Diabetes Patients Using Pharmacometrics Modelling
106	Othman MF	Health Professional Awareness of Drug Cost : A Systematic Review
107	Misnan A	Prevalence and Factors Associated with Drop Out among the USM Tobacco Quitline Service Clients in Malaysia
108	Puspha RN	Drug Utilization Review: Analgesics among Patients with Acute, Nociceptive Non-Cancerous Pain
109	Cheann LL	Psychological Distress and Emotional Burnout of Health Professionals in Hospital Setting: A Comparison Between Doctors and Pharmacists
110	Hashim N	Effects of Ethanolic *Orthosiphon stamineus* Extract on the Behaviour of Gestated and Non-Gestated Female Rats Subjected to Chronic Mild Stress
111	Jafari SF	*In vitro* and *In vivo* Anticancer Activities of Potassium Koetjape: A Solubility Enhanced Formulation of Koetjapic Acid Isolated from *Sandoricum koetjape*
112	Iskandar TS	Comparison of Protein Profile for Chicken, Pork and Beef Using Proteomic Approach
113	Shaukat AR	The Use of Traditional and Complementary Medicine to Conceive, During Pregnancy and the Postpartum Period in Kuala Muda District, Kedah, Malaysia
114	Salim MR	Characterization of Plastics from Original and Falsified Panadol Actifast Blister Pack Using Differential Scanning Calorimetry
115	Sharma D	Drug Content and *In vitro* Dissolution of Ciprofloxacin Tablets
116	Thuraisingam M	A Comparative Study of Attention and Mental Alertness Level Between Coffee and Green Tea Users in KPJ Healthcare University College
117	Kumari AVAG	Antimicrobial Activity of *Moringa oleifera* Leaves Extracts Against Isolated Human Dental Pathogens
118	Anandarajagopal K	Antipyretic activity of *Hibiscus rosa-sinensis* Stem Extract
119	Khan A	Development of Polymeric Films for the Effective Delivery of Timolol Maleate in the Management of Glaucoma

120	Hanish Singh JC	Doxycycline Attenuates Cognitive Dysfunction on Cerebral Ischemic Stroke in Wistar Rats
121	Menon BVV	The Prescribing Pattern of Antidiabetics and Utilization of Clinical Practice Guidelines in Managing T2DM Patients in a Private Hospital
122	Beshir SA	Evaluation of the Predictive Performance of Bleeding Risk Scores in Patients with Nonvalvular Atrial Fibrillation on Oral Anticoagulants

MPSPSC2017000014 (Poster)
SKIN LIGHTENING EFFECT OF SEAWEED GEL FORMULATION: AN *IN VIVO* STUDY

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INTRODUCTION: There are numerous skin lightening products out there that use harmful substances such as mercury and hydroquinone. Therefore, seaweed gel formulation was formulated by using seaweed as the main ingredient to provide skin lightening effect to the skin as well as to provide moisture and improve skin conditions without greasy feels to the skin.
OBJECTIVE: This study is to assess the skin lightening effect of seaweed gel formulation besides the safety of the formulation to the consumers.
METHODS: A total of 15 healthy female subjects (19-24 years old) were selected according to skin condition, age and sun behavior. Melanin content, skin hydration, collagen intensity and skin elasticity were assessed using DermaLab Combo, Cortex Technology. All of the aforementioned assessments were done at mid volar area of the right forearm after applying the formulation at the respected area every day for 28 days. The assessment was done once a week for 4 weeks.
RESULTS: The seaweed gel formulation has significantly reduced the melanin content of the subjects, provides extra hydration to the stratum corneum as well as improving its collagen intensity. However, it does not significantly improve the skin elasticity. The reducing of melanin content shows significant difference after applying the formulation for 3 weeks. The hydration of stratum corneum improves after 1 week of applying the formulation, while collagen intensity increases after 3 weeks of applying the formulation.
CONCLUSION: Seaweed gel formulation provides skin lightening effect as well as improves hydration and collagen intensity of the skin.

MPSPSC2017000018 (Poster)
THE EFFECTS OF CURCUMIN IN NEUROTRANSMITTER SIGNALING IN KAINATE MODEL OF EPILEPTIC RATS

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INTRODUCTION: Temporal lobe epilepsy is the most common and difficult-to-treat type of partial epilepsy. By understanding the molecular mechanism of epileptogenesis, it is likely to discover new therapies with antiepileptogenic effect. Curcumin has been shown to have potential antiepileptogenic effect in preclinical studies. However, its molecular pathways in modulating epileptogenesis remain unclear.
OBJECTIVES: Current study investigated the antiepileptogenic pathways associated with curcumin therapy on gene expression hippocampal brain tissues of kainic acid (KA)-induced post-status epilepticus rats.
METHODS: A single dose of kainic acid 10 mg/kg was used to induce a convulsive status epilepticus in female Wistar rats. After one week of curcumin treatment, gene expression profiling by using microarray was conducted on hippocampal tissues. A set of differential expression changes was determined based on criteria of dual fold change in either direction and $p < 0.05$, whereas gene annotation and pathway analysis had been performed using Database for Annotation, Visualization and integrated Discovery software.
RESULTS: Multiple biological processes were involved in KA-induced epileptogenesis, including neurotransmitters signalling. KA demonstrated to be involved in downregulating GABAρ receptor (GABRR1) and glutamate related receptors (GRIN2C, GRID1). Curcumin had been shown to be involved in increasing the GABAergic transmission via upregulation of $GABA_A$ receptor-associated protein (GABARAP) and decreasing the glutamatergic transmission by upregulating glutamate transporter (SLC1A3).
CONCLUSION: This study provides novel insights into the mechanisms of curcumin in modulating neurotransmission in epileptic brain, which forms the fundamental for future studies in its molecular pathways as an anti-epileptogenic agent.

MPSPSC2017000019 (Poster)

DESIGN, OPTIMIZATION, FORMULATION AND EVALUATION OF EDARAVONE NANOPARTICLES BY USING BOX-BEHNKEN DESIGN SURFACE RESPONSE METHODOLOGY

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OBJECTIVE: To optimize, prepare and evaluate edaravone nanoparticles by 3 levels factorial design using Box-Behnken surface response method.
METHOD: The edaravone nanoparticle formula was optimized by 3 levels factorials design using design expect software. The nanoparticles were prepared by using emulsification method ethyl cellulose (EC) as a biodegradable polymer. The prepared nanoparticles were subjected to morphology, particle size, entrapment efficiency and in-vitro drug release studies.
RESULTS: The software produced 17 formulations with varying concentration of EC, PVA and Tween-80 with a fixed dose of edaravone (5 mg). The drug and polymer compatibility study was done by FTIR spectroscopy. All the 17 formulations morphology was spherical in shape and the zeta potential rage is -12.7 mV to -28.5 mV. The particle size and entrapment efficiency (EE) was main independent variable in the formula optimization. The in-vitro dissolution of all the formulations were followed initial burst release followed by sustained release more than 12 hours. Based on the factorial design studies, the optimized formulation of edaravone nanoparticle was founded. The optimized formulation was observed particle size and EE i.e. 589.2nm and 77.24% respectively. From the observed results, the values were subjected to factorial design of 17 formulations. The observed values are very closely matches with formulation 7.
CONCLUSION: The edaravone nanoparticle formula was optimized by 3 levels factorial design and the 5 mg of edaravone, 450 mg EC, 2000 PVA and 300 mg tween-80 is the best formulation to easy scale up the production of edaravone nanoparticle.

MPSPSC2017000020 (Poster)

INITIATIVES IMPROVING DOCUMENTATION AND COMMUNICATION OF PATIENT'S DRUG ALLERGY IN A PRIVATE HOSPITAL SETTING

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INTRODUCTION: Inconsistent documentation and communication of drug allergy (DA) among healthcare professionals resulted in medication errors. It is pivotal to establish a mechanism to prevent DA related adverse events.
OBJECTIVE: To describe initiatives taken by Sunway Medical Centre to improve documentation and communication of DA.
METHODS: Several improvement initiatives were undertaken. 1) Hospital-wide policy related to handling DA information was developed and executed. 2) Alert features were added into Hospital information System for staff to enter patient's DA. 3) Pharmacy staffs stamp "Allergy" on the prescription when alerted, and screen the prescription against allergy at each step of prescription processing. 4) Referral to pharmacist can be made to provide education and issue "Drug Allergy Card". 5) Education sessions to nurses were conducted throughout the years. 6) Monthly audit was conducted to obtain compliance rate of documentation of DA.
RESULTS: Series of initiatives led to increased awareness among healthcare professionals. Numbers of reported medication error related to DA reduced (3 in year 2013, 2 in year 2014, 1 in year 2015, and zero in year 2016), and numbers of referral to pharmacist and "Drug Allergy Card" issued to patient increased (7 in year 2014, 31 in year 2015, 44 in year 2016). Compliance rate of allergy documentation was 99% in 2015 and 2016.
CONCLUSION: Comprehensive documentation and communication of DA is indispensable to reduce medication errors related to DA. Introduction of Computerized Physician Order Entry (CPOE) in the near future will further close these gaps and improve quality of care.

MPSPSC2017000021 (Poster)
FABRICATION OF FACE CREAM CONTAINING ENRICHED FRACTION OF PROTOCATECHUIC ACID FROM *CLINACANTHUS NUTANS (C. NUTANS)* LEAVES

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INTRODUCTION: *C. nutans* is predominantly native to Malaysia and contains variety of bioactive constituents including protocatechuic acid (PCA). PCA was found to have cosmeceutical value which protects skin from oxidative stress. Emulsion is a dispersion of a liquid in other immiscible liquid with surfactant as stabilizer. Most cosmetics developed as oil-in-water emulsion and required to have certain criteria such as homogenous, mild-to-skin and stable.
OBJECTIVES: To formulate and characterise a face cream containing PCA enriched fraction.
METHODS: Cream formulation involves 82.7% aqueous and 15% oil and 2.3% cooling phases. It was formulated via double boiling, agitation and homogenization techniques. Formulated cream was characterised by evaluating physical (phase separation before and after centrifugation), organoleptic (visual, colour, odour and texture), particle size, zeta potential, rheology, pH and microbial contamination and PCA quantification by high-performance liquid chromatography (HPLC) analyses.
RESULTS: A homogenous cream was formulated having light yellow colour, smooth texture and chamomile scent. Centrifugation test showed no phase separation. Particle size of the cream was 4.27±0.05µm with the span value of 0.55±0.02. Zeta potential of the cream was -68.3±0.8mV. The rheological analysis of the cream showed flow behaviour of pseudoplastic non-Newtonian. Then, pH of the cream was 5.14±0.02. All microbial limit test showed absent of microbial growth. HPLC analysis showed the PCA peak clearly at 8.122 minutes retention time.
CONCLUSION: Face cream containing PCA enriched fraction from *C. nutans* leaves was formulated. The parameters for cream characterization were within the specification. Face cream, particle size, pH, rheology, zeta potential.

MPSPSC2017000023 (Poster)
THE EVOLUTION AND EXPANSION OF CLINICAL PHARMACY SERVICE AND ITS IMPACT IN A PRIVATE HOSPITAL SETTING

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INTRODUCTION: The pharmacy practice in Sunway Medical Centre has evolved from a profession that dispenses medications in pharmacy to optimize the use of medications at ward level.
OBJECTIVE: To describe expansion of clinical pharmacy service and its impact in SunMed - a tertiary private hospital in Malaysia.
METHODS: Clinical pharmacy service began with coverage of 2 medical wards in year 2012 was then expanded extensively in year 2015, to cover 9 wards/units with support by recommendation from healthcare accreditation bodies. Referral to clinical pharmacist can also be made via the Pharmacy Referral Form for wards with no clinical pharmacist coverage. Provision of service are prioritised to patients who are identified "at risk" of medicines-related problems.
RESULTS: The increase of full-time clinical pharmacists from 2 pharmacists in year 2014 to 5 pharmacists in year 2015 leading to increased numbers of patients being reviewed (6915 in year 2014, 9483 in year 2015, 19480 in year 2016) and numbers of clinical interventions (635 in year 2014, 1845 in year 2015, 3855 in year 2016). The interventions were predominantly adverse events prevented (26%), patient education (19%) and medication reconciliation (17%), with the average acceptance rate of 85.6% by doctors. Clinical pharmacists also actively involved in medication-related quality improvement initiatives, such as antimicrobial stewardship, training to nurses and development of educational material for patients.
CONCLUSION: Expansion of clinical pharmacy service improved patient care and contributed to effective medication management within the hospital. Assessment of interventions' clinical significance will be instrumental for future study.

MPSPSC2017000025 (Poster)
DRUG-EXCIPIENT COMPATIBILITY TESTING FOR A FIXED-DOSE GABAPENTIN-CARBAMAZEPINE CAPSULE

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INTRODUCTION: Carbamazepine and gabapentin have been concomitantly prescribed for neuropathic pain. in order to increase patient's compliance, a fixed-dose carbamazepine-gabapentin combination is recommended.
OBJECTIVE: This study aims to test compatibility between gabapentin and carbamazepine with several excipients.
METHODS: Two compatibility assessment methods which are DSC and FTIR were used to assess the potential incompatibility. The thermograms of DSC and FTIR spectra were furthered compared between the drug-drug/excipient mixtures against individual drug or excipients. The examples of tested excipients are lactosemonohydrate, magnesiumstearate, talc, HPMC, corn starch and microcrystalline cellulose.
RESULTS: DSC results suggested that, all tested excipients were physically compatible with carbamazepine. However, the melting peak of gabapentin showed significant shifted peak which indicate possible physical interactions with lactosemonohydrate, magnesiumstearate and talc. Nevertheless, the interactions were only occurred when the temperature was higher than room temperature and without any evidence at ambient temperature, hence, physically compatible. The significant pattern of shifted peak was also seen in the physical mixture of carbamazepine and gabapentin. In order to protect one of the drugs, carbamazepine was chosen to be granulated with 2% and 5% of HPMC solutions which act as granulating liquid. The result of peak melting point of gabapentin was greatly improved for both solutions as if there is no interaction with carbamazepine. FTIR results illustrated that, the selected excipients such as lactosemonohydrate, magnesiumstearate, Talc and HPMC in the prototype formula were chemically compatible with gabapentin and carbamazepine.
CONCLUSION: To conclude, the granulation of carbamazepine had successfully rendered it to be compatible with gabapentin and all excipients.

MPSPSC2017000026 (Poster)
CLINICAL AUDIT ON INHALER TECHNIQUE AMONG HOSPITAL SERDANG ADULT PATIENTS

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INTRODUCTION: Correct inhaler technique is essential to maximize the benefits of the medications, and pharmacists play an important role to identify patients who failed to use their inhaler correctly.
OBJECTIVES: To determine the proportion of patients who able to use their inhaler correctly.
METHOD: The audit was carried out from August 2016 to May 2017. Patients on regular inhaler aged 18 years and above who came for prescription refill and those who were admitted to the hospital during the specified audit time were recruited. Patients' inhaler technique was audited using Malaysia Respiratory Medication Therapy Adherence Clinic (RMTAC) checklist. Patients may attempt the audit thrice. If they fail the first attempt, verbal counseling and patient information leaflet were given. If they fail the second attempt, a video was shown. After the third attempt, patients who failed were referred to RMTAC clinic.
RESULT: A total of 256 patients were recruited. Among these patients 70.7% were above 50 years old. At first attempt, 174 (68.0%) patients passed the audit. Those who failed the first attempt, 71 (86.6%) patients passed after the second attempt. Only 1 patient failed after the third attempt.
CONCLUSION: This audit showed face-to-face training session(s) and video improved patients' inhaler technique. However, continuous patient education with repeated assessment is very important to retained optimal inhaler technique especially in elderly patients. Regular audit on patients' inhaler technique is recommended.

MPSPSC2017000027 (Poster)
FORMULATION AND CHARACTERIZATION OF COSMETIC CREAM INCORPORATING *PIPER BETLE LINN*. EXTRACT

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INTRODUCTION: *Piper betle Linn*. is an evergreen and perennial plant with glossy heart-shaped leaves which contains various biologically active compounds. Hydroxychavicol is a phenolic compound found in *Piper betle* leaves which exhibits many potential biological activities such as antimicrobial, antioxidant, anti-inflammatory and anti-tyrosinase.
OBJECTIVES: The study aimed to formulate cosmetic cream incorporating *Piper betle* extract and to characterize the developed cream.
METHODS: The cosmetic cream containing 0.02% *Piper betle* extract was developed by incorporating three phase ingredients include aqueous phase (75.2%), oil phase (20.8%) and cooling phase (4.0%). O/W emulsion was prepared by adding aqueous phase into oil phase through a combination process of heating up to 75ºC and homogenization at 3500 rpm. The cream formulation was characterized for organoleptic properties, pH, particle size, zeta potential, rheological behaviour and microbial limit test.
RESULTS: For organoleptic properties, the cream has an off white color, pleasant odour, smooth texture and no phase separation. The cream formulation has a pH value of 5.39 ± 0.03 which was near to skin pH (4.5-5.5), smaller particle size of 3.73 ± 0.01 µm and polydispersity index of 0.56 ± 0.11, negatively zeta potential of -57.53 ± 1.47 mV and exhibited non-Newtonian behavior in which viscosity decreases when shear rate increases. The cream has no growth of viable microorganisms, yeasts and fungi.
CONCLUSION: Based on physical characterization, the cream containing 0.02% *Piper betle* extract is regarded as a stable formulation with acceptable organoleptic properties.

MPSPSC2017000031 (Poster)
EFFECT OF COMBINATION OF SUPERDISINTEGRANTS ON THE PHYSICAL PROPERTIES OF ORALLY DISINTEGRATING TABLETS

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INTRODUCTION: The oral route is considered to be the most acceptable drug delivery route. However, it is not favourable amongst geriatric patients and for those suffering from dysphagia. Thus, orally disintegrating tablets (ODTs) have been developed to address such compliance issues, as ODTs are able to dissolve or disintegrate in the oral cavity without any addition of water. Presence of superdisintegrants in the formulation is aimed to achieve rapid tablet disintegration by facilitating the swelling and breaking up of the tablet into smaller fragments. The choice of superdisintegrants can influence the disintegration rate of ODTs. Use of a combination of superdisintegrants in the formulation can enhance the performance of the ODTs.
OBJECTIVES: in this study, the effect of combination of two different types of superdisintegrants, namely croscarmellose (CCS) and crospovidone (CP), at varying ratios (total of 6 %w/w) on the physical properties of the ODTs was evaluated.
METHODS: ODTs were prepared by direct compression method and were characterised for the uniformity of weight, tablet hardness, disintegration time and wetting time of the ODTs.
RESULTS: The ODTs containing the combination of superdisintegrants at a ratio of 2:4 (CCS: CP) was found to be the most optimal formulation with the shortest disintegration time (8.53 ± 0.69 seconds), as compared to the other formulations studied.
CONCLUSION: In this preliminary study, the formulation which has demonstrated the most optimal performance can be further explored with the incorporation of active drugs.

MPSPSC2017000033 (Poster)
PRE-SCALE UP FORMULATION OF HALAL SKIN-LIGHTENING CREAM CONTAINING *PIPER BETLE L.* EXTRACT

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INTRODUCTION: *Piper betle L*. extract was found to give skin-lightening effect due to the presence of phytochemical, hydroxychavicol. As hyperpigmentation is a common skin issue, developing this cream in a larger scale allows identification and solutions to problems that usually occur in pilots scale development. The procedures involved before scaling up will also highly affect the actual process later. Hence, meticulous preparation before scaling up is required.
OBJECTIVES: The objectives of this study is to prepare for scaling up a halal cosmetic cream containing *Piper betle* L. extract to pilot scale
METHODS: The Quality Target Product Profile (QTPP) was decided based on previous research. From the QTTP, prior knowledge and equipment's specification, the Critical Quality Attributes (CQA) is extracted and the Critical Process Parameters (CPP) to be monitored was identified. On top of that, in depth research was done in order to buy raw materials that fulfil halal requirements.
RESULTS: CQA identification was used in deciding critical characteristics of the cream to be analysed such as organoleptic properties, pH, particle size, zeta potential, rheology, microbial count and HPLC analysis. Batch Manufacturing Record (BMR) and Batch Packaging Record (BPR) for the scale up were able to be completed and all the raw materials were also endorsed by a Halal committee hence confirming the product to be produce will be of halal quality.
CONCLUSION: The identification of parameters affecting the cream, elaborate research on equipment and materials involved in scale up process is important in planning a scale up formulation.

MPSPSC2017000035 (Poster)
PILOT TESTING OF THE PHYSICIAN-PHARMACIST PARTNERSHIP FOR PATIENT SAFETY INTERVENTION

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INTRODUCTION: The Physician-Pharmacist Partnership for Patient Safety (4Ps) is an intervention that was developed based on a needs assessment, literature and a conceptual framework. It involves both doctors and pharmacists discussing how to optimise patients' medications to improve safety.
OBJECTIVES: To pilot test the 4Ps intervention in improving doctor-pharmacist collaborative working relationship.
METHODS: This pilot test was conducted with doctor-pharmacist dyads in a primary care clinic in Kuala Lumpur. Four doctor-pharmacist dyads delivered the 4Ps intervention to patients with chronic diseases once a week over three weeks in December 2014. The impact of 4Ps on the collaborative working relationships between doctors and pharmacists were assessed using a validated Physician-Pharmacist Collaborative index (PPCI) at week 1, 2 and 3. The findings were further explored by interviewing doctors and pharmacists individually using a topic guide at week 1 and 3. The interviews were audio-recorded, transcribed verbatim and analysed thematically.
RESULTS: The PPCI scores of doctors and pharmacists increased gradually over time (doctors=86.0, 92.3, 94.0, pharmacists=83.0, 87.0, 89.3). The interviews revealed that the 4Ps helped to build trust between doctors and pharmacists, and provided a platform for them to communicate. The 4Ps also facilitated knowledge exchange between the doctors and pharmacists. In addition, 77 drug-related problems were identified by the dyads.
CONCLUSION: This preliminary study found an increase in professional exchanges and collaboration between the doctors and pharmacists, and improves patient safety. The 4Ps should be evaluated in a randomised controlled trial to establish its effectiveness definitively.

MPSPSC2017000040 (Poster)

SCREENING OF *PUNICA GRANATUM* SEEDS FOR ANTIBACTERIAL AND ANTIOXIDANT ACTIVITY AGAINST VARIOUS EXTRACTS

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INTRODUCTION: Punica granatum plant fruits best in areas with long, hot and dry summers (90° F) and cooler winters. Genus name comes from the Latin name contracted from Punicum malum. The different extracts (maceration with ethanol and hexane separately and soxhlet with ethanol) were investigated for their antimicrobial and antioxidant activity.
OBJECTIVES: The literary evidences over therapeutic agent's research over development of antioxidants and antibiotic activity from medicinal plants inspired the investigators to aim over screening of Punica granatum seeds for antibacterial and antioxidant activity with various extracts.
METHODS: Penicillin and ampicillin were used as positive control using agar well diffusion method. For the antioxidant activity, DPPH radical scavenging assay was performed. IC_{50}, the half maximal (50%) inhibitory concentration was measured in this study.
RESULTS: Ethanol soxhlet extracts showed good inhibitory effect over growth of all the seven strains of bacteria. Ethanol maceration extract only possessed antimicrobial activity against *Neisseria gonorrhoeae, Pseudomonas aeruginosa and Staphylococcus aureus* whereas hexane extract showed no antimicrobial activity. For the antioxidant activity, DPPH radical scavenging assay was performed. I_5, the half maximal (50%) inhibitory concentration for extracts WERE calculated. Ethanol soxhlet (ES) extract showed the lowest IC_{50} value (1350.27 µg/mL); hexane extract (HM) showed IC_{50} value of 3005.66 µg/mL and ethanol maceration extract (EM) showed highest IC_{50} value (4852.26 µg/mL).
CONCLUSION: The seeds of *punica granatumhas* shown substantial antibacterial and antioxidant activity.

MPSPSC2017000041 (Poster)

DEVELOPMENT OF SHARED DECISION MAKING AID TOOL FOR THE USE OF PHARMACISTS IN CASES OF ANTIOBIOTIC TREATMENT IN RESPIRATORY TRACT INFECTION AMONG ADOLESCENTS

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INTRODUCTION: The use of shared decision-making aid tool among medical practitioners showed a significant reduction in irrelevant antibiotic prescription, especially respiratory infections. in this study, a tool is especially designed for guiding antibiotic use in respiratory infections among adolescents.
OBJECTIVE: This study aims to apply the shared decision-making model in pharmacy practice by developing a tool that can be used by pharmacists in antibiotics treatment among adolescents.
METHOD: A purposive sampling is used that involved pharmacists in Malaysia. The respondents will choose the statements that they think most suitable to be incorporated into the tool. To evaluate the designed tools, pilot study was conducted among 20 pharmacists and their respective adolescent patients.
RESULTS: in the evaluation study, respondents showed very good acceptance toward the aid tool. All respondents (n = 20, 100%) agreed that information delivered in this tool is sufficient to help them make decisions. Respondents also felt that the decision-making process with pharmacists was useful for them (n=20, 100%).
CONCLUSION: The designed tool seems to have a positive impact in the decision-making process and received good acceptance from users.

MPSPSC2017000044 (Poster)
LIGAND-BASED PHARMACOPHORE MODELLING OF PHOSPHODIESTERASE 10A INHIBITORS

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INTRODUCTION: Phosphodiesterase 10A (PDE10A) is a dual substrate enzyme that catalyses the inactivation of both cAMP and cGMP in to AMP and GMP respectively. This enzyme is expressed mainly in striatum. Thus inhibition of PDE10A results in elevation of cAMP and cGMP which activate the direct and indirect pathways in striaum. Activation of these two pathways provides effective improvement of positive, negative, and cognitive symptoms of schizophrenia. All the available antipsychotic drugs provide relief for the positive symptoms of schizophrenia but they do not improve the negative or cognitive symptoms of the disease. Besides that, the existing therapies produce serious side effects that impact the patient's adherence to the treatment.
OBJECTIVES: The present study was designed to develop ligand-based pharmacophore models for PDE10A inhibitors and validates the generated pharmacophores.
METHOD: in this study LigandScout was used to generate ligand-based pharmacophore by clustering a series of well-known inhibitors in to nine clusters according to their pharmacophore characteristics, followed by validation of the generated pharmacophores by using test and decoy sets.
RESULTS: The pharmacophores of the compounds contain three features: aromatic ring, hydrophobic unit, and hydrogen bond acceptor except three pharmacophores which contain only two features. All generated pharmacophores were able to recognize most of the active compounds in test set.
CONCLUSION: Nine pharmacophores were generated and validated by using LigandScout software. The validated pharmacophores will be used for screening of Universal Natural Products Database in future study.

MPSPSC2017000046 (Poster)
THE DISSOLUTION PERFORMANCES OF FLURBIPROFEN SOLID DISPERSION SYSTEMS

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INTRODUCTION: inconsistent dissolution performances of solid dispersion-(SD) are reported in recent years. A review reported that 18% of the studies revealed deterioration of dissolution performance or similar bioavailabilities of SD to their corresponding physical mixed (PM).
OBJECTIVES: The goal of this study is to investigate the relation of dissolution performances of SD to their amorphicity which is generally believed to be crucial for dissolution enhancement.
METHODS: SD was prepared by spray drying Flurbiprofen (FBP) by using PVPVA, Cabopol (CP) and HPMC as carriers. PM was prepared by simple mixing using a mortar and pestle. Physicochemical properties of the samples were tested using XRPD, DSC and ATR-FTIR. Dissolution performances of the prepared SD and their corresponding PM.
RESULTS: SD 30% FBP-HPMC revealed halo pattern in XR diffractogram which indicating fully amorphous nature. This result is in concurrence with its DSC thermograms where no apparent melting point was detected. In contrast, DSC thermograms of both SD FBP-PVA and SD FBP-CP systems revealed melting of FBP at 150^{o}C which indicate the present of crystalline traces. This could be further supported by the characteristic FBP diffracted peaks noted in XRPD of SD FBP-PVA and SD FBP-CP. interestingly, partially crystalline dispersion of SD-FBP-PVA recorded higher dissolution rate as compared to a fully amorphous dispersion of SD FBP-HPMC.
CONCLUSIONS: Partially crystalline dispersion is sufficient in dissolution enhancement of poorly soluble FBP. Performance-effective SD entails a suitable carrier in order to maintain its amorphous solubility and not hurdle its release.

MPSPSC2017000047 (Poster)
KNOWLEDGE, ATTITUDE AND PRACTICE OF MEDICAL AND HEALTH SCIENCES STUDENTS AT IIUM TOWARDS ZIKA VIRUS

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INTRIDUCTION: Zika virus is a mosquito-borne flavivirus that was first identified in Uganda in 1947. The most common complications of this virus are congenital brain abnormalities to the foetus and Guillain-Barré syndrome in the infected person. Knowledge about Zika is the most crucial part for prevention as zero knowledge about Zika could contribute to poor attitude and practice towards the disease itself.
OBJECTIVES: This study aims to assess knowledge, attitude and practice towards Zika virus among undergraduate medical and health sciences students at international Islamic University Malaysia (IIUM). The study is a cross-sectional and involved 180 final year students from Kulliyyah of Pharmacy and Kulliyyah of Allied Health Sciences and third and fourth year students from Kulliyyah of Dentistry and Kulliyyah of Medicine. A self-administered questionnaire was used for data collection.
RESULTS: The response rate was 85.5% (171/200), with 57 (33.33%) males and 114 (66.67%) females. Their knowledge of the cause, signs and symptoms of Zika virus infection was quite good, but moderate regarding its complications. The majority of respondents had a common perspective that baby will be the most affected from this infection which indicates a good knowledge. Approximately, half of them were considering taking preventive measures against Zika virus which indicates a good attitude towards it.
CONCLUSION: Further exposure of the students in the future providing them more details about harmful effects of Zika on humans is recommended.

MPSPSC2017000052 (Poster)
KNOWLEDGE, ATTITUDE AND PRACTICE OF MENTAL HEALTH DISORDER AMONG HEALTHCARE STUDENTS OF MEDICINE, PHARMACY AND DENTISTRY IN A PRIVATE UNIVERSITY IN KEDAH, MALAYSIA

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INTRODUCTION: The university years of an individual are emotionally and intellectually more demanding than almost any other stage of education. Mental health problem will not only affect the mental of university students but also affect their physical, biochemical and physiological health which will ultimately affect their healthy status.
OBJECTIVES: The objective of the study is to evaluate and compare knowledge, attitude and practice of medical, pharmacy and dental student in AIMST University on the progress of Mental Health.
METHOD: A cross sectional observational study on a convenient random sample of 284 students from University was conducted by using validated questionnaires to gather data on the attitude, knowledge and practice of students.
RESULTS: From 284 respondents in university, 104 of the respondents were males (36.6%) and 180 of were females (63.4%). For knowledge and perception, males (Mean rank = 11.12±2.01) were having less adequate knowledge than females (Mean rank=11.75±1.74). Among the Faculties, students from Medical were having the most adequate knowledge than other faculties (Mean rank=12.02±1.58). The result showed that those in the age group of 25-30 were having more adequate knowledge on mental health disorder (Mean rank=11.86±0.90). Pre-final and final year respondents were having almost same percentage of adequate knowledge (Mean rank=11.52±1.77) and (Mean rank=11.51±1.96) respectively.
CONCLUSION: The medical students were having most adequate knowledge as compared to other faculties in the university.

MPSPSC2017000053 (Poster)
KNOWLEDGE AND PERCEPTION OF HEALTH CARE STUDENTS OF A MALAYSIAN PRIVATE UNIVERSITY ABOUT EBOLA VIRUS DISEASE (EVD)

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INTRODUCTION: Ebola Virus Disease (EVD) also known as Ebola haemorrhagic fever is a deadly disease with current outbreak in West Africa. EVD outbreak was notified as a Public Health Emergency of international importance on 8th August, 2014 by WHO. Malaysia, being one of the major countries with tourist attractions, is at high risk for the spread of EVD through tourists, international students and some immigrants.
OBJECTIVES: This study is to assess the Knowledge and Perception of Medicine, Dentistry and Pharmacy students in AIMST University regarding Ebola virus disease (EVD). Objectives of the study to evaluate the gaps in knowledge & attitude among Medicine, Dentistry and Pharmacy students regarding EVD and how to improve the knowledge of the disease to the students as a preparations to face the disease in future.
METHODS: Cross sectional observational study was conducted. It was conduct on 84 medicine students, 90 dentistry students and 99 pharmacy students from AIMST University, Kedah, Malaysia.
RESULTS: Student's knowledge and attitude were correlated with the students' Faculty, Year of study, Age, Gender, Race, Education background and Residency. Mann Whitney and Kruskal Wallis test were performed to observe the statistical difference among the variables. Pharmacy students (38.4%) are having more adequate knowledge than Dentistry (28.9%) and Medicine students (27.4%).
CONCLUSION: Gaps between knowledge and practices were seen in all categories which is alarming. These gaps were mainly due to lack of knowledge, poor motivation, education system and students psychology.

MPSPSC2017000054(Poster)
TREND OF PHARMACEUTICAL PRODUCTS POISONING CASES REPORTED TO THE NATIONAL POISON CENTRE OF MALAYSIA FROM 2006 TO 2015

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INTRODUCTION: The Malaysian National Poison Centre (NPC) provides nationwide telephone information service on the management of various poisonings to health professionals and general public. Enquiries related to pharmaceutical products poisoning is the most common enquiries received by the centre.
OBJECTIVE: This study aimed to review and report the trend of pharmaceuticals poisoning cases handled by NPC for a period of 10 years (2006–2015).
METHODS: The poisoning case reports documented by the centre during the ten year period were retrieved and studied retrospectively.
RESULTS: During the study period, a total of 39,088 poisoning calls were received and around 36% (N=14,081) were pharmaceutical poisoning cases. Majority of the pharmaceutical poisoning cases were intentional (60.5%), in females (53%), in Malays (32.3%) and in the age group of 20-74 years-old (56.3%). Of all the cases, majority were acute poisoning (90.4%) and oral exposure was about 98.6%. Analysis of the sub-classes of the common pharmaceutical products showed that psychiatric medicines (21%), topical agents (18.1%) and analgesics (14.4%) were the most common products implicated. One alarming feature of the study was the high incidence of poisoning in children less than 18 years-old which is about 33.9%. Overall, pharmaceuticals poisoning cases referred for enquiry to NPC showed an increasing numbers each year.
CONCLUSION: This study showed an increasing trend of pharmaceuticals poisoning in Malaysia. Statistics presented may not represent the actual burden of pharmaceuticals poisoning in Malaysia, but may serve as a baseline towards better preventive measures in planning related drug policies in the country.

MPSPSC2017000055 (Poster)
FACTORS ASSOCIATED WITH CONSUMER SPENDING ON HERBAL PRODUCTS AMONG THE GENERAL PUBLIC IN KUALA LUMPUR, MALAYSIA

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INTRODUCTION: An estimated US$ 500 million is spent annually in Malaysia on traditional and complementary medicines, including herbal products. Yet, little is known about the factors influencing such spending.
OBJECTIVES: To examine the factors influencing consumers' spending on herbal products in Malaysia.
METHODS: This study was a cross-sectional interviewer-administered questionnaire survey, using a convenience sample of study participants aged 18 years and older. The independent variables were herbal therapies adoption model variables, comprising consumer characteristics, social systems, communication channels, and herbal characteristics. The amount of spending on herbal products was the dependent variable, with participants' responses dichotomise into low spender and high spender, based on the median split of monthly spending on herbal products.
RESULTS: A total of 400 individuals were included in this study. The mean and median monthly spending were RM 97.86 (SD = 92.73) and RM 60 (IQR = 90) respectively. Significant associations were observed between spending on herbals and gender ($P < 0.001$), age ($P = 0.001$), marital status ($P = 0.01$), occupation ($P = 0.03$), frequency of use of herbal products ($P < 0.001$), place of purchase ($P = 0.01$) and beliefs about safety ($P = 0.03$) and effectiveness ($P = 0.03$) of herbal products.
CONCLUSION: An adoption model of herbal therapies is useful in explaining consumers spending on herbal products. The identified factors could be helpful in informing policy and practice decisions relevant to the promotion and utilization of herbal products in Malaysia.

MPSPSC2017000057 (Poster)
DRUG UTILISATION PATTERN AND ASSOCIATED ADVERSE DRUG EVENTS IN HYPERTENSIVE PATIENTS AT A TERTIARY HEALTHCARE FACILITY IN SOUTH-WEST NIGERIA

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INTRODUCTION: Hypertension is one of the most common chronic diseases and an important public health problem worldwide. Hypertensive patients are subject to multiple and life-long therapies, which make them at high risk of adverse drug events. Few data are available on adverse drug events (ADEs) among hypertensive outpatients.
OBJECTIVES: The objectives of this study were to determine the pattern of drug utilization and the associated adverse drug events in a cohort of hypertensive patients.
METHOD: This was a cross-sectional study using interviewer guided, self-administered questionnaires. Using purposive sampling technique, the questionnaires were distributed to 400 consented patients. Complete medication profile was ascertained from respective case notes of the patients at the end of each clinic.
RESULTS: 370 valid questionnaires were retrieved (response rate = 92.5%). Overall, diuretics had the highest frequency of usage (64.1%), followed by antiplatelets (46.5%) then angiotensin converting enzyme inhibitors (44.9%). Only 3.5% of the study patients were on monotherapy. ADEs were experienced in about 64.6% of the study patients. The top 5 frequently experienced ADEs in this study were Dizziness, 76 (20.5%); Headache, 75 (20.3%); Tiredness, 67 (18.1%); Cough, 64 (17.3%); Peripheral oedema, 33 (8.9%) and Faintness upon rising, 26 (7.0%).
CONCLUSION: The antihypertensive drug use at the tertiary healthcare facility was, to a large extent, rational and consistent with the Guidelines for the Management of hypertension in Nigeria and the World Health Organization/ international Society of Hypertension (WHO/ISH). However, high frequency of ADEs has been reported by the patients, thus, the need for preventive intervention measures in the outpatient setting to reduce the burden of ADEs.

MPSPSC2017000058 (Poster)
MEASUREMENT OF EFFECT OF SPIRONOLACTONE ON PATIENTS WITH RHEUMATOID ARTHRITIS

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INTRODUCTION: The aim of the study is to investigate whether addition of spironolactone (add-on therapy) would provide additional clinical and functional benefits to patients who have active Rheumatoid Arthritis (RA) and have an incomplete response.
OBJECTIVE: To measure the effect of spironolactone on naïve RA patients via Health Assessment Questionnaire–Disability index (HAQ-DI).
METHOD: A prospective, open label study under defined inclusion criteria. 32 patients continued their previous DMARD(s) regimen as such and Spironolactone 2mg/kg OD was added. 28 patient was completed the study and assessed at baseline & 12^{th} week visit. The patient, physician assessment and pain score were calculated using Wilcoxon rank sum test by software SPSS-20.
RESULTS: All three scales of assessment found significant results after 12 weeks of add-on therapy. There was an improvement in Patient assessment of general health on VAS scale from 6.8 ± 0.24 to 3.76 ± 0.34 ($p<0.01$ vs baseline). An improvement of health score or decrease in disease activity from 7.03 ± 0.22 to 4.11 ± 2.61 in 0-12 weeks ($p< 0.01$ vs baseline) was exhibited on the Physician assessment score of general health on VAS. Pain intensity assessment improved from 7.0 ± 0.29 to 2.88 ± 0.37 ($p<0.01$ vs baseline). There were decreases in pain in majority joint count for many of patients.
CONCLUSION: The add-on therapy of spironolactone improved the physical function and health related quality of life in patient with RA, who had an incomplete response since long time.

MPSPSC2017000059 (Poster)
UNCOMPLICATED MALARIA DIAGNOSTIC AND TREATMENT PRACTICES IN PRIMARY HEALTH CARE FACILITIES OF PLATEAU STATE, NIGERIA: A RETROSPECTIVE STUDY

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INTRODUCTION: Malaria is one of major public health problems, especially in the sub-saharan Africa, and remains as one of the leading causes of morbidity and mortality worldwide, with pregnant women and children being more vulnerable. Inappropriate health workers' diagnostic and treatment practices have been reported to be one of the factors responsible for the high prevalence of the disease.
OBJECTIVES: The study evaluated health workers' adherence to malaria diagnostic and treatment guideline across selected Primary Health Care (PHC) facilities in Plateau state, Nigeria.
METHODS: The study involved retrospective extraction of diagnostic and treatment information of 1200 patients treated for uncomplicated malaria in PHC facilities using Patients' Medication Review Form (PMRF). Statistical analysis was conducted using Statistical Package for Social Sciences (SPSS) version 23.
RESULTS: Malaria cases accounted for 63.1%, followed by 'malaria and typhoid' (19.2%). More females (59.7%) patronized the facilities for malaria treatment compared to their male counterparts (40.3%). Most of the diagnoses (81.9%) were done via rapid diagnostic test (RDT) approach (42.0%) and microscopy (39.9%), with symptomatic method (18.1%) been the least. The use of artemisinin-based combination therapy (ACT) was high (45.3%), followed by artemether (14.8%) and quinine (14.2%) across the facilities and age groups. Only 45.3% of the health workers prescribed antimalarial drugs in accordance to guideline.
CONCLUSION: The health workers adhered to guideline in diagnostic practices, but not in their prescribing practices of antimalarial medications.

MPSPSC2017000061 (Poster)
VASORELAXATION EFFECT OF *GLYCYRRHIZAE URALENSIS* THROUGH THE ENDOTHELIUM DEPENDENT PATHWAY

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INTRODUCTION: *Glycyrrhiza uralensis (G. uralensis*) is one of the herbs used in traditional Chinese medicine and plays a major role as an anti-hypertensive agent.
OBJECTIVES: This study is designed to investigate the vasorelaxation effect of *G. uralensis* from various extracts and to study its pharmacological effect.
METHODS: The vasorelaxation effect of *G. uralensis* extracts were evaluated on thoracic aortic rings isolated from Sprague Dawley rats. Three extracts of *G. uralensis* were tested: 95% ethanolic extract (ENG), 50% ethanolic extract (EFG) and water extract (WG).
RESULTS: EFG showed the strongest vasorelaxation activity. EFG caused the relaxation of the aortic rings pre-contracted with phenylephrine either in the presence or absence of endothelium and pre-contracted with potassium chloride in endothelium-intact aortic ring. Nω-nitro-L-arginine methyl ester, methylene blue, or 1H-[1,2,4]Oxadiazolo[4,3-a]quinoxalin-1-one inhibit the vasorelaxation effect of EFG in the presence of endothelium. On the other hand, in the presence of the potassium channel blockers (tetraethylammonium and barium chloride), the vasorelaxation effect of EFG was not affected, but glibenclamide and 4-aminopyridine did inhibit the vasorelaxation effect of EFG. With indomethacin, atropine and propranolol, the vasorelaxation effect by EFG was significantly reduced. EFG was also found to be effective in reducing Ca2+ release from sarcoplasmic reticulum and the blocking of calcium channels.
CONCLUSION: The results obtained suggest that EFG is involved in the NO/sGC/cGMP pathway.

MPSPSC2017000063 (Poster)
VASORELAXANT PROPERTIES OF *VERNONIA AMYGDALINA* ETHANOL EXTRACT AND ITS POSSIBLE MECHANISM OF ACTION

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INTRODUCTION: Vernonia amygdalina Del. (VA) (Asteraceae) is commonly used to treat hypertension in Malaysia.
OBJECTIVES: This study aims to investigate the vasorelaxant mechanism of VA ethanol extract (VAE) and analyzes its tri-step FTIR spectroscopy fingerprint.
METHODS: Dried VA leaves were extracted with ethanol through maceration and concentrated using rotary evaporator before freeze-dried. The vasorelaxant activity and the underlying mechanisms of VAE using the cumulative concentration (0.01–2.55 mg/mL at 20-min intervals) were evaluated on aortic rings isolated from Sprague Dawley rats in the presence of antagonists.
RESULTS: The tri-step FTIR spectroscopy showed that VAE contains alkaloids, flavonoids, and saponins. VAE caused the relaxation of pre-contracted aortic rings in the presence and absence of endothelium with EC50 of 0.057 ± 0.006 and 0.430 ± 0.196 mg/mL, respectively. In the presence of Nx-nitro-L-arginine methylester (EC50 0.971 ± 0.459 mg/mL), methylene blue (EC50 1.203 ± 0.426 mg/mL), indomethacin (EC50 2.128 ± 1.218 mg/mL), atropine (EC50 0.470 ± 0.325 mg/mL), and propranolol (EC50 0.314 ± 0.032 mg/mL), relaxation stimulated by VAE was significantly reduced. VAE acted on potassium channels, with its vasorelaxation effects significantly reduced by tetraethylammonium, 4-aminopyridine, barium chloride, and glibenclamide (EC50 0.548 ± 0.184, 0.158 ± 0.012, 0.847 ± 0.342, and 0.304 ± 0.075 mg/mL, respectively). VAE was also found to be active in reducing Ca2þ released from the sarcoplasmic reticulum and blocking calcium channels.
CONCLUSION: The vasorelaxation effect of VAE involves upregulation of NO/cGMP and PGI2 signalling pathways, and modulation of calcium/potassium channels, and muscarinic and b2-adrenergic receptor levels.

MPSPSC2017000064 (Poster)
OVERVIEW OF SIGNALING MECHANISM PATHWAYS EMPLOYED BY BPAID IN VASODILATORY ACTIVITY

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INTRODUCTION: Hypertension, one of the famous "silent killers" that can attack people at any age, is a current hot topic among scientists due to multiple syndromic behaviour and concomitant diseases. The new scientific-based TCM formulation approach was used in a previous study by combining five TCM herbs including *Gastrodia elata* Bl., *Uncariarhynchophylla* (Miq.) Miq. ex Havil., *Pueraria thomsonii* Benth., *Panax notoginseng* (Burk.) F. H. Chen, and *Alisma orientalis* (Sam.) Juzep in optimized ratio (named BPAid).
OBJECTIVE: The objective of present study was to evaluate the mechanism pathways employed by BPAid for vasodilatory effect with the use of an *in vitro* isolated aortic rings assay.
METHODS: The fingerprints and chemical properties of BPAid was identified by using tri-step FTIR spectroscopy and compared with its derivatives.
RESULTS: All the mechanisms investigated were involved in the BPAid's vasodilation activity in which the majority contributed via the NO/sGC/cGMP pathways, followed by PGI_2, β_2-adrenergic, and M_3-receptors pathways. Furthermore, the BPAid appeared to manage vascular tone by regulating action potential via potassium and both VOCC and IP_3R pathways.
CONCLUSION: The results obtained has confirmed the expected outcome that the benefits of TCM herbs in BPAid can meet the criteria of counteracting multiple signalling mechanism pathways involved in the aetiology of hypertension. It is also suggested that the majority of the vasodilatory effects exerted by BPAid were attributed to the presence of saponins and aromatic ring-containing vasoactive compounds.

MPSPSC2017000068 (Poster)
VASORELAXANT ACTIVITIES AND UNDERLYING PHARMACOLOGICAL MECHANISMS OF *GYNURA PROCUMBENS MERR.* LEAF EXTRACTS IN ISOLATED RAT THORACIC AORTA

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INTRODUCTION: Previous studies have investigated the cardiovascular activity of *Gynura Procumbens* single-solvent extracts.
OBJECTIVE: The objective of this study was to evaluate the in vitro vasorelaxant properties and the underlying pharmacological mechanisms of serial extracts and fractions of Gynura procumbens Merr (GP).
METHODS: The leaves of GP were serially extracted with petroleum ether, chloroform, methanol and water using maceration method. Suspended aorta preparations were pre-contracted with phenylephrine (PE 1 µM) or potassium chloride (K^+ 80 mM) followed by cumulative addition of GP extracts (0.25 - 3 mg/ml).
RESULTS: The petroleum ether extract (GPPE) was the most potent among the four extracts. Pre-incubation of endothelium-intact aorta with atropine (1 µM), indomethacin (10 µM), methylene blue (10 µM) and prazosin (1µM) have no effect on GPPE induced vasorelaxation. The vasorelaxant effect of GPPE was also not completely blocked in endothelium denuded aorta. In contrast, pre-treatment of aorta rings preparations with L-NAME (10 µM), glibenclamide (10 µM), and propranolol (1µM) attenuate the vasorelaxation effect of GPPE. The calcium-induced vasocontractions were antagonized significantly with GPPE in calcium free and high potassium medium.
CONCLUSION: These results illustrate that Ca^{2+} antagonizing actions of GPPE in rat isolated aorta are comparable to that of verapamil and may be mainly responsible for vasodilation. The GC-MS, and antioxidant studies also support our results.

MPSPSC2017000071 (Poster)
QUALITY OF 'EDUCATIONAL INTERVENTION TOOL' IN PREVENTION OF HUMAN PAPILLOMA VIRUS INFECTION AMONG PARENTS

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INTRODUCTION: Human papillomavirus (HPV) is one of the most common sexually transmitted infections. Sexually active adolescents and young adults are at high risk for HPV infection. The knowledge of parents regarding HPV is vital who are decision makers for their age eligible children for HPV vaccination.
OBJECTIVES: This study aimed to develop informative educational pamphlet and evaluate its effectiveness among parents.
METHODS: A prospective longitudinal study using pre-validated questionnaire with convenience sampling method. Percentage, frequency, median and IQR used for descriptive statistics McNemar's test and Wilcoxon signed rank test for inferential statistics using SPSS version 23.
RESULTS: The research findings showed a significant increase in knowledge gain (N = 858) with a median knowledge score (maximum 10) for pre-test (Mdn = 3 and IQR= 9, $p < 0.001$) and post intervention test were (Mdn = 10 and IQR=2, $p < 0.001$) respectively, with a significant improvement of 7 points ($Z = 18.8$; $p < .001$). This reveals a very poor knowledge and benchmark information was present among the participants before intervention. At the three to six months post intervention follow-up (N = 858), a statistically significant increase in correct responses was observed (Mdn = 10, IQR= 1, $p < .001$) with a significant improvement in knowledge score ($Z=18.8$; $p <.001$) from base line score.
CONCLUSION: The educational protocol significantly increased knowledge about HPV infection and HPV vaccination, regardless of socio-demographic characteristics and risk behaviours.

MPSPSC2017000073 (Poster)
ISOLATION AND PURIFICATION OF BIOACTIVE PROTEIN(S) WITH ANTI-BREAST CANCER PROPERTY FROM *GYNURA PROCUMBENS (LOUR.) MERR.* EXTRACT

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INTRODUCTION: Gynura Pocumbens (Lour.) Merr, is a traditional medical plants that can be found in Asia countries. It is used to treat kidney discomfort, rheumatism, diabetes mellitus, and hypertension. The previous studies show that small molecular compounds from the leaves extract possess anti-hyperglycemic, anti-hyperlipidaemic, anti-cancer and anti-inflammatory activities. In our recent study, we have shown the raw proteins extract of the plant leaves with anti-cancer properties.
OBJECTIVES: This study is aimed to identify and isolate the bioactive protein(s) that exerts anti-cancer activity in the leaves of G. Procumbens.
METHODS: The proteins were extracted by using mild phosphate buffer. Then, proteins were purified by ammonium sulphate precipitation and gel filtration. The gel-filtration fractions were taken to treat human breast cancer cell line MDA-MB-231. SDS-PAGE was used to analyse the active fraction. Protein bands were excised for in-gel digestion and the tryptic-digested peptides were analysed using LCMS/MS.
RESULTS: Cell morphologies showed that active fraction SN-F11/12 inhibits the growth of MDA-MB-231 cell line. There were 15 protein bands detected on the SDS-PAGE analysis of fraction SN-F11/12. Out of 15 protein bands of the fraction SN-F11/12, two protein bands were found no hit.
CONCLUSION: fraction SN-F11/12 of G.Procumbens inhibits the growth of MDA-MB-231 cell line.

MPSPSC2017000075 (Poster)
PAEDIATRIC PHARMACIST: OUR JOURNEY AND MILESTONE

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INTRODUCTION: Paediatric pharmacy service is formed to assist medical team in providing optimum pharmacotherapy in paediatric population. in 2016, there were 252 paediatric wards available in MOH hospitals with 55% of the paediatric wards have designated paediatric pharmacists (45% full time and 10% part time ward pharmacists)
OBJECTIVES This study is aimed to provide an overview of paediatric pharmacy service in MOH hospitals and to review the types of interventions and information provided by paediatric pharmacists.
METHODS: All types of intervention and information provided by paediatric ward pharmacists during office hour in MOH hospitals with paediatric pharmacy services from January 2016 to December 2016 were retrospectively collected.
RESULTS: A total of 47,878 clinical interventions were done by paediatric ward pharmacists. Among the 16 types of the clinical interventions done, the three most common interventions were regimen with inappropriate dose (25.25%), inappropriate drug (16.70%) and recommendation regarding therapeutic drug monitoring (TDM) (13.48%). It was followed by the intervention on the inappropriate frequency (9.30%), inappropriate duration (6.24%) and recommendations regarding total parenteral nutrition (TPN) (6.77%). Absence of the prescribers signatures or stamps (44.4%, n=2768) and incomplete patient data (43.6%, n=2720) were the highest interventions made for non-clinical interventions. Drug doses and method of drug administration were the highest drug information provided amongst all the categories (38.2%, n =10586).
CONCLUSION: Appearance of paediatric pharmacy service in paediatric ward did assist medical team in optimizing patient pharmacotherapy and delivering drug information which is specialized in paediatric population.

MPSPSC2017000076 (Poster)
A PRELIMINARY STUDY: CONSUMER SATISFACTION TOWARDS ACCESSIBILITY AND PHARMACEUTICAL CARE IN MALAYSIA COMMUNITY PHARMACIES

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INTRODUCTION: Pharmacists are one of the most accessible health care professionals in terms of location and play an increasing role in maintaining patient health as well as driving quality. Pharmaceutical care is an extended role of pharmacist to ensure better quality services in healthcare delivery. Efforts should not only be made to track consumer satisfaction with pharmacy services but also to improve it where needed.
OBJECTIVES: To investigate consumer satisfaction towards accessibility and pharmaceutical care in Malaysia community pharmacies.
METHODS: A cross-sectional survey of 400 pharmacy consumers at 4 randomly selected community pharmacies was conducted. Data were gathered on consumer demographics and their satisfaction with the community pharmacies using a 32-item rated instrument items. Descriptive statistics was computed on sample characteristics and the questionnaire items. Inferential statistics used Student's t test and one-way ANOVA.
RESULTS: The response rate for the survey was 79.3% (317/400). The study found that 61% of the respondents have excellent level of satisfaction towards access to community pharmacy, 37% was satisfied at good level and 2% poor. Meanwhile, 54.7% of the respondents was satisfied at excellent level to performance of pharmaceutical care, 44.7% was at the good level and 0.7% was at the poor level. This study also found that marital status, job status and income have significant influence on satisfaction level.
CONCLUSION: Malaysian consumers have high satisfaction towards accessibility and pharmaceutical care in Malaysia community pharmacies. Thus, there is an opportunity for the community pharmacies to enhance their consumer loyalty by improving the services.

MPSPSC2017000077 (Poster)
KNOWLEDGE AND ATTITUDE TOWARDS ANTIBIOTIC USE AMONG PUBLIC IN ALOR SETAR, KEDAH

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INTRODUCTION: Antibiotic resistance has been a serious concern worldwide. Decreasing in the development of new antibiotic to counter with the menace of antibiotic resistance causes less antibiotic effective for the treatment. Increasing knowledge and positive attitude towards antibiotic use will be helpful to prevent antibiotic resistant.
OBJECTIVES: The study aims to evaluate the level of knowledge and attitude towards antibiotic use as well as the usage of antibiotic among public.
METHODS: This cross-sectional study was carried out in Alor Setar, Kedah. The data were extracted for descriptive analysis. Chi-Square test was used to assess association between variables.
RESULTS: 57.8% of the respondents had a good knowledge of antibiotic, 40.1% had a moderate level and 2.1% had poor knowledge of antibiotic. However 84.4% of respondents had positive attitude towards antibiotics and 15.6% of respondents had a negative attitude towards antibiotics. There was a statistically significant difference in knowledge level across gender ($p<0.011$), age group ($p<0.000$), race ($p<0.000$), education background ($p<0.000$), household income per month ($p<0.000$) and occupation related to healthcare ($p<0.000$). Level of attitude found to be statistically significant difference between age group ($p<0.000$), race ($p<0.000$), education background ($p<0.000$), household income per month ($p<0.013$), occupation related to healthcare ($p<0.002$) and family member's occupation related to healthcare ($p<0.186$).
CONCLUSION: The knowledge and attitude of using antibiotic in Alor Setar still considering not in satisfying level. Thus, future antibiotic awareness should be carried out to improve knowledge among public.

MPSPSC2017000079 (Poster)
DEVELOPMENT, TRANSLATION AND VALIDATION OF ADULTS KAP SURVEY QUESTIONNAIRE REGARDING PREVENTION OF HUMAN PAPILLOMA VIRUS INFECTION AND HPV VACCINATION

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INTRODUCTION: Knowledge, attitude and perception (KAP) play major roles in Knowledge-Attitude-Behaviour (KAB) model, which proposes knowledge initiates changes in attitude that results in behaviour change.
OBJECTIVES: The aim was to develop and determine validity and reliability of the KAP - HPV questionnaire (KAP-HPV) among young adults aged 18-25 years.
METHODS: A prospective, cohort study is performed using convenience sampling. The questions were adapted and slightly modified. Content and face validated, text readability consensus done to assess difficulty level, Forward-backward translated to local Bahasa Malaysia by linguistic lecturers and KAP scores among Known-Group's, test-retest using Spearman's rho correlation and Mann-Whitney test to identify score differences and Cronbach's-alpha test for internal consistency.
RESULTS: The readability consensus used Flesch Reading Ease score (50.4) and Flesch-Kincaid grade level (9.7). Known-Group's validity using Mann-Whitney U test at pre- and post-test, ($U(24) = 15.5$, $p < .001$) and ($U(24) = 12$, $p < .001$). Cohen kappa statistic ($\kappa = .69$, 95% CI, $p < .001$) measured the agreement between translations. For test reliability, Mann-Whitney test indicated knowledge score higher for post-test, ($U(24) = 6$, $p < .001$) than pre-test, ($U(24) = 2$, $p < .001$). The Cronbach's alpha test for internal consistency was (.862, $p < .001$, Mdn = 51 IQR = 7).
CONCLUSION: The people, who are convinced when they obtain specific knowledge, will change their attitude and start practicing behaviour change. Repeated measure of KAP using the same instrument significantly increases KAP score.

MPSPSC2017000081 (Poster)
AN ASSESSMENT OF KNOWLEDGE OF SMOKING CESSATION AMONG FINAL YEAR PHARMACY STUDENTS IN MALAYSIA

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INTRODUCTION: Pharmacists can play a fundamental role in assisting smokers to quit. Preparing the pharmacy students with comprehensive training is crucial to ensure the delivery of effective smoking cessation services.
OBJECTIVES: The primary objectives of this study were to determine the current knowledge of smoking cessation and uncover the clinical 'gaps' in pharmacy-based smoking cessation practice among final year pharmacy students.
METHODS: in this cross-sectional study, a total of 302 final year undergraduate pharmacy students were recruited using two stage cluster sampling technique. Post signed consent, a self-administered and validated Smoking Cessation in Pharmacy (SCIP) questionnaire was distributed among the final year pharmacy students from six Malaysian universities. Data from the completed questionnaires were extracted and analysed.
RESULTS: Responses of 173 (57.3%) and 129 (42.7%) students were recorded from public and private sector universities, respectively. The majority of the respondents (n=256, 84.8%) possessed moderate level of knowledge regarding general aspects of smoking cessation. On the contrary, only two students (0.7%) possessed good level of knowledge; whereas, the majority of the students (98%) either showed moderate or poor level of knowledge regarding questions specific to pharmacologic or pharmacotherapeutic aspects of smoking cessation.
CONCLUSION: The study findings provide a valid indication of 'gaps' in clinical knowledge of respondents regarding evidence-based smoking cessation intervention. Thus, a curriculum related to pharmacologic and pharmacotherapeutic aspects should be incorporated in the undergraduate pharmacy curricula.

MPSPSC2017000082 (Poster)
ADJUNCT MEDICATIONS IN UNCOMPLICATED MALARIA MANAGEMENT AND THEIR DIRECT COST IMPLICATIONS ON PATIENTS: A CASE STUDY OF PRIMARY HEALTH CARE FACILITIES IN PLATEAU STATE, NIGERIA

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INTRODUCTION: Rampant use of adjunct medications in Primary Health Care (PHC) facilities have been documented, and this is attributable to inappropriate treatment of diseases in country.
OBJECTIVES: The study examines the prescribing trend and its direct cost for the treatment of uncomplicated malaria treatment in PHC facilities at Plateau state, Nigeria.
METHODS: The study involved retrospective extraction of all non-antimalarial drugs that were used in treating 1200 patients for uncomplicated malaria in PHC facilities using patients' medication review forms (PMRF). Statistical analysis was conducted using IBM Statistical Package for Social Sciences (SPSS[R]) version 23.
RESULTS: Analgesics were mostly prescribed (86.1%) followed by antibiotics (79.8%), and haematinics (65.7%), and the prescribing patterns cut across age groups. Details of the various classes of the adjunct medications showed oral paracetamol been the most prescribed analgesic (69.2%), while 55.1% of the prescribed haematinics were oral vitamin B-complex. Amoxicillin was the most patronized antibiotics (24.2%) by the prescribers. The average number of drugs per prescription was 4.67. The mean direct cost of adjunct medications (450.49 naira (Nigeria currency) / 1.27 USD / RM 5.40) per malaria case was higher than the mean direct cost of antimalarial drug (307.88 naira (Nigeria currency) / 0.87 USD / RM 3.69) per case.
CONCLUSION: The result showed that most of the adjunct drugs prescribed to patients for uncomplicated malaria treatment across the PHC facilities were not necessary, and incurred more cost to the patients.

MPSPSC2017000086 (Poster)
SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEMS OF DUTASTERIDE: DEVELOPMENT AND *IN-VITRO* CHARACTERIZATION

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OBJECTIVES: The present study aims to prepare and evaluate the self-nanoemulsifying drug delivery (SNEDDS) system to enhance dissolution rate of a poorly soluble drug dutasteride.
METHODS: The formulation was prepared using capryol 90, Transcutol HP and Cremophor EL as oil, co-surfactant and surfactant, respectively. The pseudo-ternary phase diagrams with presence and absence of drug were plotted to find out the nanoemulsification range and also to evaluate the effect of dutasteride on the emulsification behaviour of the phases. Prepared SNEDDS formulations were evaluated for its particle size distribution, Zeta potential, nanoemulsifying properties, robustness to dilution, self-emulsification time, turbidity measurement, drug content and in-vitro dissolution. The optimized formulations are further evaluated for heating cooling cycle, centrifugation studies, freeze thaw cycling, particle size distribution and zeta potential were carried out to confirm the stability of the formed SNEDDS formulations.
RESULTS: The particle size, zeta potential and polydispersity index of the optimized formulation found to be 90.21±5.67 nm, -5.15± 1.28 and 0.29 ± 0.021, respectively. All the formulations show 60-88% drug release at 15th minute in in-vitro dissolution study. The in vitro results are revealed that the prepared formulation enhanced the dissolution rate of dutasteride significantly as compared with pure drug.
CONCLUSION: Based the results, it was concluded that the dutasteride-loaded SNEDDS shows potential to enhance the dissolution of dutasteride, thus improving the bioavailability and therapeutic effects.

MPSPSC2017000087 (Poster)
IMPACT OF PLATINUM BASED THERAPY AND NON-PLATINUM BASED THERAPY ON SURVIVAL IN MALAYSIAN PATIENTS WITH ADVANCED NON-SMALL CELL LUNG CANCER

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INTRODUCTION: The management of non-small cell lung cancer (NSCLC) is becoming difficult with the passage of time due to its increased prevalence and progressive nature of the disease. Determining survival prognosis and defining the appropriate therapy in patients with lung cancer is challenging, as the majority of patients are diagnosed at a later cancer stage.
OBJECTIVE: This study aimed to investigate the effect of platinum based therapy (PBT) and non-platinum based (NPB) therapy on survival in advanced NSCLC.
METHODS: This study was a retrospective cohort of 163 adult patients diagnosed with locally advanced or metastatic NSCLC at Hospital Kuala Lumpur, Malaysia. Survival was estimated using Kaplan-Meier test. Log-rank test was used to evaluate differences in survival curves and Cox proportional hazard model to calculate hazard ratio.
RESULTS: Majority of the patients received PBT (n = 134; 82.2%) as compared to NPB therapy (n = 29; 17.7%). The median survival time for PBT was 377 days. The survival curves of PBT and NPB therapy were significantly different ($\chi 2$ = 5.355, p = 0.021). The hazard ratio of PBT was 2.080 (95% C.I (1.110 - 3.898) p = 0.022) times higher than NPB therapy.
CONCLUSION: Survival is significantly better with NPB therapies among advanced NSCLC patients.

MPSPSC2017000088 (Poster)

DOES EGFR MUTATION INFLUENCE SURVIVAL OUTCOMES FOLLOWING FIRST-LINE GEFITINIB THERAPY IN MALAYSIAN PATIENTS WITH ADVANCED NON-SMALL CELL LUNG CANCER?

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INTRODUCTION: Advanced non-small cell lung cancer (NSCLC) patients with active mutations in epidermal growth factor receptor (EGFR) gene have been shown to confer sensitivity to EGFR tyrosine kinase inhibitor (TKI) gefitinib. However, wide interpatient variability in treatment outcomes in these patients remains unaccounted for response to EGFR TKIs.
OBJECTIVES: This study aimed to evaluate the influence of EGFR mutation on survival outcomes among Malaysian patients with advanced NSCLC receiving first-line gefitinib therapy in the Department of Oncology and Radiotherapy, Hospital Kuala Lumpur, Malaysia.
METHODS: Locally advanced or metastatic (stage III or IV) NSCLC adult patients (≥ 18 years old) harbouring EGFR mutations, receiving first-line gefitinib treatment (N = 93) were evaluated in this retrospective study. Overall survival (OS) was estimated using Kaplan-Meier analysis. Log-rank test and Cox proportional hazard model was implemented to evaluate the differences in OS.
RESULTS: The OS for 19 adult first- line gefitinib treated NSCLC patients was 802.498 days (95% C.I, 621.679 - 983.316 days). The median survival time for patients with positive EGFR status was 834.863 days (95% C.I, 656.494 - 1013.232) whereas 246 days (95% C.I 76.917 - 415.083) for patients with negative EGFR status. No significant difference in survival curves was observed among patients having positive EGFR gene mutation status and negative EGFR gene mutation status (overall p = 0.091).
CONCLUSION: EGFR mutation is an independent prognostic factor for adult Malaysian patients with advanced NSCLC receiving first-line gefitinib treatment.

MPSPSC2017000089 (Poster)

ADHERENCE TO TOPICAL CORTICOSTEROID USE AMONG THE PUBLIC IN THE COMMUNITY PHARMACY SETTING IN SEBERANG PERAI SELATAN, PENANG

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INTRODUCTION: Topical Corticosteroids (TCS) have been a mainstay in the treatment of various skin ailments with ample evidence that support their long-term efficacy and safety. Despite that, the adherence to TCS treatment tends to be suboptimal in dermatological patients.
OBJECTIVES: This study aimed to assess the level of adherence of TCS use among public in community pharmacy setting.
METHODS: This study is a cross-sectional community based survey conducted in Seberang Perai Selatan, Penang. The questionnaires were distributed to the walk in customers who purchased any TCS for themselves or their child. However, customers who purchased TCS for friends or relatives were excluded from this study. The Medication Adherence Rating Scale, (MARS) was used as the study instrument.
RESULTS: A total of 317 completed surveys were collected between January to March 2017. Majority of the respondents (n = 181, 57.1%) bought TCS for their children and another 42.9% (n = 136) bought it for themselves. Majority of the respondents were supplied TCS by pharmacist 61.2% (n = 194). The most prevalent indications of TCS use were to treat rash (22.1%), eczema (20.2%), dermatitis (18.0%) and psoriasis (17.7%). The MARS response, showed that 47.0% (n = 193) and 53.0% (n = 168) of respondents showed good and poor level of adherence respectively toward TCS usage.
CONCLUSION: Adherence to TCS usage is poor. It indicates a need for re-education of pharmacists and patients on the safety of TCS use and the potential impact of their counselling on treatment adherence.

MPSPSC2017000091 (Poster)
INCIDENCE OF TREATMENT-RELATED SIDE EFFECTS IN NON-SMALL CELL LUNG CANCER PATIENTS RECEIVING PLATINUM THERAPY AT A PUBLIC TERTIARY CARE HOSPITAL

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INTRODUCTION: The occurrence of side effects in cancer patients undergo platinum therapy (PT) is found to be grave concern.
OBJECTIVES: The study determined the incidence of side effects experienced by non-small cell lung cancer (NSCLC) patients receiving PT.
METHODS: A retrospective observational study reviewed 163 adult NSCLC patients (≥18 years old) at Department of Oncology and Radiotherapy, Hospital Kuala Lumpur, Malaysia. Descriptive analysis was performed using IBM SPSS 21.0.
RESULTS: Amongst 163 patients, 68.7% were male and 31.3% were female. There were 134 patients (82.2%) treated with PT and 29 (17.8%) with non-platinum therapy. Commonly used platinum agents (PAs) were cisplatin 90 out of 134 patients (67.2%), carboplatin 44 out of 134 patients (32.8%). Side effects observed after PT were gastro-intestinal (G.I) related (nausea, vomiting, diarrhoea) (n = 129; 95.5%), shortness of breath (n = 13; 9.6%), fever (n = 7; 5.1%), headache (n = 13; 9.6%), neuropathy (n = 15; 11.1%) and constipation (n = 2; 1.4%). The occurrence of anaemia was found to be higher among patients who received cisplatin (n = 69; 82.1%) as compared to carboplatin (n = 36; 66.6%). The other common side effects were myelosuppression characterised by neutropenia (n = 14; 17.2%) and thrombocytopenia (n = 8; 9.8%) for cisplatin therapy whereas it occurred in 9 (21.4%) patients of each for carboplatin therapy.
CONCLUSION: GI related side effects were highly reported due to PT. PAs-induced anaemia and myelosuppression appeared to be notably high in this study.

MPSPSC2017000093 (Poster)
HIGH PERFORMANCE LIQUID CHROMATOGRAPHY OF NEWLY SYNTHESIZED PRODRUGS OF ACECLOFENAC

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INTRODUCTION: The research work is focussed on the synthesis and method development and validation of newly synthesized prodrugs of aceclofenac. Previously various papers have been published for the synthetic procedures followed for the study. The method development and validation of the two newly synthesized prodrugs by UV-spectroscopy have been reported.
OBJECTIVES: The objective of the study focusses on the method development and validation of these prodrugs by HPLC technique. The analysis of these prodrugs is necessary as these prodrugs of aceclofenac, which an important NSAID used in rheumatoid arthritis, showed relatively less side effects as compared to the original drug. The further analysis of these prodrugs will give us the purity of the drug and authenticate that the method followed was accurate and precise.
METHODS: The samples were sent to JawaharLal Nehru University, New-Delhi, India for the testing and the solvents used were ethanol and DMSO. The C-18 reverse phase column was used for the method development and validation.
RESULTS: The results obtained after HPLC were accurate and precise. A single independent peak of each prodrug has been obtained by high intensity. The peak was sharp and clear.
CONCLUSIONS: The entire study suggests that the method followed for the analysis by HPLC was accurate, precise and rapid. The clear peak obtained for both the prodrugs were of high intensity and was clear. With this study we introduce the new method of development and validation of newly synthesized prodrugs by HPLC technique.

MPSPSC2017000094 (Poster)
KNOWLEDGE AND USE OF ANTIBIOTICS AMONG THE PUBLIC IN THE KLANG VALLEY

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INTRODUCTION: Antibacterial resistance (ABR) is an alarming global public health threat in effective treatment and prevention against common bacterial infections. It has a significant economic impact as a result of prolonged illness, morbidity and mortality. The Ministry of Health has initiated various strategies to promote judicious use of antibiotics, including National Antibiotic Guidelines and the Antimicrobial Stewardship Protocol in all government healthcare facilities. Inappropriate prescribing, overuse and misuse of antibiotics are key factors contribute towards ABR.
OBJECTIVES: This study aimed to evaluate the knowledge and use of antibiotics by the public in Klang Valley. Methods: Cross sectional quantitative survey using validated self-administered questionnaire involving 548 respondents in Klang Valley.
RESULTS: Out of 543 respondents, 80.1% agreed that antibiotics are effective against bacterial infection. However, they also had the wrong idea that antibiotics can be used for viral (63%), fungal (76.2%) and parasitic (74.6%) infections; and for cough and cold (55.2%). Antibiotics were mostly obtained from private clinics and hospitals (91.2%), with 42.7% and 25% of the respondents received counselling from doctors and community pharmacists. Only 65.7% of the respondent complete their course of antibiotics with 30.8% kept left over antibiotics for future use; and 36.2% actually shared their antibiotics with friends and family members.
CONCLUSION: Public needs to be educated on the cause and implication of AMR. Doctors and pharmacists often being the first contact for patients are in the best position to influence the appropriate use of antibiotics, alongside policy makers to combat ABR.

MPSPSC2017000095 (Poster)
CHOLINESTERASE INHIBITORY-GUIDED FRACTIONATION AND ISOLATION OF BIOACTIVE COMPOUNDS FROM *TINOSPORA CRISPA* AND *MELASTOMA MALABATHRICUM*

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INTRODUCTION: Tinospora crispa Miers or akar patawali and Melastoma malabathricum Linn, or senduduk are medicinal plants used traditionally in Malaysia.
OBJECTIVES: The present study was undertaken to isolate bioactive compounds of methanol extracts of both plants using cholinesterase enzymes inhibitory-guided approach.
METHODS: Tinospora crispa had shown the potent cholinesterase inhibitory activity. Further purification of it resulted in isolation of one compound, apigenin. Melastoma malabathricum of chloroform fraction and n-butanol fraction had shown potent cholinesterase inhibitory activity. Further purification of both fractions yielded a total five compounds: ursolic acid, corosolic acid, quercetin, betulinic acid.
RESULTS: Apigenin had shown a good cholinesterase inhibitory activity in-vitro against acetylcholinesterase and butrylcholinesterase (IC_{50} of 38.73 µg/mL) and (IC_{50} of 48.93 µg/mL). The cholinesterase inhibitory activity of both, ursolic and corosolic acid had the highest cholinesterase inhibitory activity against acetylcholinesterase and butrylcholinesterase with IC_{50} values ranging from 7.02 - 22.36 µg/mL and 8.61 - 11.55 µg/mL. Betulinic acid was the most potent among all the isolated compounds with (IC_{50} values 2.42 µg/mL and 0.21 µg/mL) against acetylcholinesterase and butrylchoilesterase.
CONCLUSION: Lineweaver-Burk plots suggested the mixed-mode of inhibition. Most of the isolated compounds considered as drugs candidatures. Molecular docking analysis showed that all compounds were successfully docked into the active binding site of cholinesterase.IC_{50} values for cholinesterase enzymes inhibitory activities of isolated compounds were found to be well correlated with their free energy of bindings, with particular binding orientation.

MPSPSC2017000096 (Poster)
DISPOSAL PRACTICES OF MEDICATION IN COMMUNITY PHARMACIES IN MALAYSIA

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INTRODUCTION: Safe disposal of medications is becoming a global concern as it has a huge impact on the environment and ultimately the health of the public. In many countries, households are advised to return their unused medications to community pharmacies as one of the methods of disposal. Community pharmacists play a major role in ensuring proper disposal of medications.
OBJECTIVES: This study reports the outcomes of a survey on community pharmacists on their disposal practices of medications and factors affecting their disposal practice; as well as their role in providing medication disposal advice to the public.
METHODS: A validated and self-administered questionnaire was distributed to 250 randomly selected community pharmacists.
RESULTS: Solid and aerosol medications were disposed mainly through rubbish bin whilst semi-solid and liquid medications were returned to the distributors. Out of the 193 respondents, 66.84% and 64.77% felt that lack of disposal guidelines and inconvenience were two main factors affecting their disposal practices, and 58.03% cited costs being another factor. Only 57.51% of the respondents felt that it is important to provide counselling to the public on safe disposal of medications, and 41.45% of the respondents actually carried out the counselling.
CONCLUSION: Improper and unsafe disposal of medications need to be addressed and there is a pressing need to create awareness on the issue of proper disposal and its impact on the environment.

MPSPSC2017000097 (Poster)
A NOVEL CONTROLLED IONIC GELATION METHOD FOR DEVELOPMENT OF CHITOSAN NANOPARTICLES

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INTRODUCTION: Chitosan is a natural polysaccharide having various biomedical applications in drug delivery and tissue engineering. Chitosan have been extensively used as a biocompatible polymer for developing nanocarriers. The chitosan based nanoparticles can be prepared by various methods such as ionic gelation, micro-emulsion technique, coacervation method. Ionic gelation has been used widely be several authors. However, tri poly phosphate based ionic gelation method also associated with problem of particle aggregation and poor physical stability. This study proposed design of a novel controlled ionic gelation strategy for chitosan nanoparticles formation.
OBJECTIVE: To develop and characterize a novel controlled ionic gelation method of chitosan nanoparticles formation.
METHODS: Chitosan nanoparticles prepared with help of inclusion complex of beta cyclodextrin and tri poly phosphate. Further nanoparticles were characterized for particle size and surface morphology using differential light scattering and transmission electron microscopy.
RESULTS: The particle size for controlled ionic gelation method was found 104.2 nm ±0.608 with good PDI value of 0.346 ±0.016. They found smaller and more uniform than normal ionic gelation method.
CONCLUSION: Chitosan nanoparticles can be successfully prepared by a novel controlled ionic gelation method using cyclodextrin and tri poly phosphate complex.

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MPSPSC2017000098 (Poster)
UTILISATION OF COMMUNITY PHARMACY SERVICES BY THE PUBLIC IN KLANG VALLEY

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INTRODUCTION: A wide range of community pharmacy services are currently available in Malaysia. Apart from management of minor ailments, prescription screening and filling, community pharmacists are also actively involved in providing health screening, monitoring tests and advisory services. However, public may not be aware of these services which ultimately lead to underutilisation.
OBJECTIVES: This study was conducted to assess the reasons of visiting community pharmacy and utilisation of community pharmacy services by the public in Klang Valley.
METHODS: A cross-sectional random sampling study involving 577 public using validated self-administered structured questionnaire.
RESULTS: Of the 414 respondents, 12.8% has never visited a community pharmacy, and 36.5% visited once or twice a year and 33.6% visited once a month. Reasons for visits were to purchase medications (60.9%), health supplements (44.9%) and toiletries (31.9%); and 56.3% for management of minor ailments. Only 19.8% sought advice from pharmacists and 9.2% used the monitoring services. For management of minor ailments, 66.6% of older adults were aware of this service as compared to young adults (82.3%) and middle-aged adults (91.8%); which correspond to their usage of this service at 44.4%, 56.6% and 57.7% respectively.
CONCLUSIONS: Community pharmacy services are underutilised and there is a need to increase awareness among the public on the services so that role extension of pharmacists can be a fulfilled.

MPSPSC2017000101 (Poster)
AWARENESS LEVEL ON MENTAL ILLNESS AMONG STUDENTS IN INSTITUTIONS OF HIGHER LEARNING IN IPOH

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INTRODUCTION: Mental disorders onset prior to the age of 25, if left untreated, can affect emotional well-being and social development. The university years are emotionally and intellectually more demanding where pressures and challenges will pose a variety of physical, social and emotional difficulties. As a result, university students become more vulnerable for developing mental health problems such as depression and anxiety disorder.
OBJECTIVES: This study was aimed to find out the levels of awareness on mental illness among students of high institutions in Ipoh through their knowledge on general and causes of mental illness and evaluate perceptions on attitudes towards mentally ill person.
METHODS: Questionnaires were administered randomly to high institutions students in Ipoh and stratified into health sciences and non-health sciences background.
RESULTS: Most of the respondents showed average in general knowledge on mental illness (59.2%), high knowledge on causes of mental illness (71.89%) and neutral attitude towards mental illness person (78.86%). From the results, students with health sciences background showed high general knowledge (45.23%) and knowledge on causes of mental illness (76.38%) compared to non-health sciences students, (28.08%) and (67.49%) respectively; ($p>0.05$). Students with positive attitude towards mental illness person was also higher (29.15%) among health sciences compared to non-health sciences students (11.33%); ($p>0.05$).
CONCLUSION: Students with health science background showed better levels of awareness on mental illness compared to non-health science students.

MPSPSC2017000105 (Poster)
CONTRIBUTION OF CARBOHYDRATE INTAKE TO HBA1C IN TYPE 2 DIABETES PATIENTS USING PHARMACOMETRICS MODELLING

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INTRODUCTION: Lifestyle changes with diet adjustment are one of the standard treatments in type 2 diabetes.
OBJECTIVE: in this study, we investigate the effect of different size and frequency of carbohydrate intake on glycosylated haemoglobin (HbA1c).
METHODS: The investigation was done with cross-over trial simulation using two published pharmacometric models, the integrated Glucose insulin (IGI) model, and the integrated Glucose RBC Haemoglobin (IGRH) model. Two populations of diabetic patients were generated, with one population having a higher fasting plasma glucose (FPG) of 127 mg/dl to 324 mg/dl represent a poorly-controlled diabetes (PC) patient and the other a well-controlled diabetes (WC) population with FPG of 72 mg/dl to 126.9 mg/dl. Both populations simulated with a standard diabetic meal intake and then compared against with three different meal intake scenarios of high and low carbohydrate intakes as well as a low frequency standard meal intake.
RESULTS: In WC population, high carbohydrate, low carbohydrate and low frequency intake produced 0.85%, -0.73% and -0.38% changes in HbA1c prediction respectively. In the PC population, HbA1c prediction were +0.30, -0.25 and -0.15. This study also found the occurrence of non-physiological profiles (NP) among the simulated individuals. Uses of correlation blocks (CR) and inter individual variability (IIV) on insulin dependent glucose clearance, fasting serum insulin and incretin slope produced simulations with least fraction of NP.
CONCLUSION: in this simulation study, we show that well-controlled type 2 diabetic patient were predicted to benefit more from changes in carbohydrate intake compared to poorly controlled patients.

MPSPSC2017000106 (Poster)
HEALTH PROFESSIONAL AWARENESS OF DRUG COST: A SYSTEMATIC REVIEW

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INTRODUCTION: The health professional are often associated with medication in managing patient's illness. Their awareness on medicine cost therefore is vital in alleviating patient's financial burden and ensuring patients are properly managed.
OBJECTIVES: This aim of this study was to review health professionals (pharmacist, nurse, and physician) level of awareness regarding cost of prescription drug products and identifying factors influencing awareness of the drug cost.
METHODS: Our search strategy included Pubmed, MEDLINE, Scopus and Science Direct. Articles for inclusion included; those that described the awareness, understanding, concerns, perceptions or knowledge of the health professional towards the drug cost or medication prices; results should be described quantitatively; have a description of how "True" costs determined and must have minimum of 10 participants of respondent either health professionals or physicians or nurses or pharmacists. Two authors reviewed each article for eligibility and extracted data independently.
RESULTS: initial search yield 2342 articles and following screening, 18 articles included with 13 done on physicians, 1 nurse, and 4 mixed of nurses and physicians with none done on pharmacist. Studies quality and methodological were poor due to unclear sampling, low response rate and unclear quantification calculation. Cost underestimation tended to be more frequent than overestimation. Qualitative information was provided in all studies.
CONCLUSION: Health professionals frequently underestimate and overestimate drug prices which reflect poor knowledge of accurate actual drug cost. It was also found that accessibility to the medication cost information and relationship between prescribers and patients are among the factors that influence medication cost awareness among health professionals.

MPSPSC2017000107 (Poster)

PREVALENCE AND FACTORS ASSOCIATED WITH DROP OUT AMONG THE USM TOBACCO QUITLINE SERVICE CLIENTS IN MALAYSIA.

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INTRODUCTION: mQuit USM Tobacco Quitline (USMTQ) Services has been officially established to aid Malaysian smokers who have intention to quit with a series of consultations to ensure successful smoking cessation and prevent relapse. Under the mQuit services, Healthcare Providers (HCP) works in collaboration with the USMTQ by referring their clients for smoking cessation program. However, there is risk for inadequate adherence to smoking cessation program and little is known about what leads to treatment discontinuation.
OBJECTIVE: To identify the prevalence and factors associated with drop out among Quitline Service clients at point of referral.
METHODS: Clients from referral Healthcare Providers (HCP) of government and private sectors and self-registered were followed-up through phone interview using a systematic and advice based protocol. Those who successfully confirmed their registration and completed 1 month consultation sessions were included in this study. Factors associated with drop out among Quitline Service clients were analysed using multivariate analysis.
RESULT: In total, 533 clients were referred to Quitline Service since its inception in September 2016. Out of these, 238 clients were registered while only 96 (40.4%) completed the one month consultations. From this number, 11 clients (11.5%) had completely dropped out from the program, 38 (39.6%) clients quit at six months follow up and the remaining 47 (48.9%) were still undergoing the consultation sessions. This paper examines the factors that might be associated with the reasons for the drop out cases based on 3 classifications: 1) referred and drop out, 2) did not complete one month consultation, 3) went through at least one month consultation and drop out.
CONCLUSION: There are number of reasons that can be associated with the cause for the drop out in the quitline program. Understanding of these reasons will help improve the quitline service that has been offered in the mQuit program.

MPSPSC2017000108 (Poster)

DRUG UTILIZATION REVIEW: ANALGESICS AMONG PATIENTS WITH ACUTE, NOCICEPTIVE NON-CANCEROUS PAIN

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INTRODUCTION: Pain is the commonest reason for patients who seek treatment at Emergency or Outpatient Department. The usage of pain medications are more likely depend on accessibility and availability of the drug at the local health setting. Currently, there is lacking of study to describe the usage of analgesic at Malaysian healthcare facilities.

OBJECTIVES: This study is aim to review the usage of analgesics prescribed among patients with acute, nociceptive non-cancerous pain in hospitals and health clinics in West Pahang.

METHODS: A multicentre, cohort, cross sectional, descriptive study was conducted at hospitals and health clinics in District of Bentong, Raub, Lipis and Cameron Highlands. All outpatients and emergency prescriptions were studied, with exclusion of hospitalized and discharged patients, diagnosis of chronic pain or patients with long term analgesics. Define daily dose (DDD) per 1,000 inhabitants per day was calculated and was compared. The expenditure of analgesics was calculated and was compared among the studied hospital and health clinics.

RESULTS: Paracetamol, Diclofenac and Mefenamic Acid are the three commonest analgesics used in most of the studied centers. Total expenditure of analgesics is recorded at RM 70,815.27, contributed the most by Hospital Kuala Lipis (40.0%), followed by Hospital Raub (25.9%), and Hospital Bentong (15.6%).

CONCLUSION: The study shows varied drug utilization pattern in studied hospitals and health clinics. The result provides preliminary start to further review the drug utilization of analgesics in local health settings.

MPSPSC2017000109 (Poster)
PSYCHOLOGICAL DISTRESS AND EMOTIONAL BURNOUT OF HEALTH PROFESSIONALS IN HOSPITAL SETTING: A COMPARISON BETWEEN DOCTORS AND PHARMACISTS

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INTRODUCTION: Psychological distress and burnout among healthcare professionals in hospital setting has been a topical issue. As healthcare professionals, devoid of psychological distress may avoid medical errors that could be costly.
OBJECTIVES: To compare the occurrence of psychological distress and emotional burnout between the doctors and pharmacists.
METHODS: A cross-sectional survey was conducted using self-administered questionnaire in a tertiary care hospital in Kuala Lumpur. Information about socio-demographic and interpersonal work-related were collected. The psychological distress were assessed using the validated Malay version of *Beck Depression inventory (BDI)* and *Beck Anxiety inventory (BAI) while* emotional burnout was assessed using the validated Malay version of *Maslach Burnout inventory Human Service Survey (MBI-HSS).*
RESULTS: A total of 119 doctors and 158 pharmacists were recruited. Respondents were predominantly female (76.2%), with a mean age of 29.7±3.5 years and 4.96±3.17 years of practice. Doctors reported higher mean score of emotional burnout (21.3±15.00) as compared to pharmacists (19.8±12.39). For psychological distress, doctors' mean score of depression (8.6±8.05) were similar to pharmacists (8.6±6.70), while the mean score of anxiety for doctors (7.7±9.64) was slightly higher than pharmacists (7.1±7.12). However, there was no significant differences observed between the doctors and pharmacists in their psychological distress and emotional burnout score.
CONCLUSION: The occurrence of emotional burnout was higher among doctors. Psychological distress among doctors and pharmacists were similar. Addressing psychological needs of the healthcare professionals and intervention were necessary to reduce burnout and psychological distress.

MPSPSC2017000110 (Poster)
EFFECTS OF ETHANOLIC *ORTHOSIPHON STAMINEUS* EXTRACT ON THE BEHAVIOR OF GESTATED AND NON-GESTATED FEMALE RATS SUBJECTED TO CHRONIC MILD STRESS

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INTRODUCTION: Women are twice more vulnerable to depression compared to men. Additionally, mothers are also at risk of suffering from postpartum depression. Many are afraid to seek treatment due to social stigma. Research on potential herbal plant that may alleviate depression might be useful.
OBJECTIVE: This study aimed to assess the effects of ethanolic Orthosiphon stamineus (OS) extract administration on the behaviour of non-gestating and dam rats subjected to stress.
METHOD: Gestating (P) and non-gestating (NP) Sprague Dawley rats were subjected to four treatments: non-stressed (NS, negative control), stressed (S), stressed and treated with fluoxetine (FLX, positive control), and stressed and treated with OS extract (OS). All stressed rats were submitted to chronic unpredictable mild stressors throughout the gestation period (same duration for NP rats). Treatment with drugs/extract started from 24H postpartum. Open Field Test (OFT), Novel Object Recognition (NOR) test and Forced Swim Test (FST) were carried out within two weeks post-weaning of offspring.
RESULT: OFT finding showed NPOS has significantly lower locomotor activity than NPFLX rats ($p=0.04$). Whereas the locomotor activity for POS rats is significantly higher than the PNT and NPOS rats ($p=0.03$ and $p=0.05$, respectively). in NOR test, all NP rat groups and PFLX rats could significantly recognized novel object from familiar object, but not POS rats. in FST, POS rats performed significantly higher immobility versus PFLX ($p<0.05$) but no different than other dams.
CONCLUSION: The effect of OS extract varies according to the parity status and the type of behaviour tests applied.

MPSPSC2017000111(Poster)

IN VITRO AND _IN VIVO_ ANTICANCER ACTIVITIES OF POTASSIUM KOETJAPE: A SOLUBILITY ENHANCED FORMULATION OF KOETJAPIC ACID ISOLATED FROM _SANDORICUM KOETJAPE_

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INTRODUCTION: Colorectal cancer is a multistep disease that occurs as a consequence of a series of pathologic changes leading to the transformation of normal epithelial cells of the colon to invasive carcinoma. This type of cancer stands at third position in the world as a lethal and metastatic carcinoma. Plant's secondary metabolites have potential to induce selective cytotoxicity against cancer cells and/or modulate multiple tumour development process, thus can serve as anticancer drugs. *Sandoricum koetjape* Merr. is a traditional medicinal plant, native to Malaysia, Cambodia and Southern Laos and has recently been introduced in Australia and America.
OBJECTIVES: In the present study an attempt was made to increase the aqueous solubility of Koetjapic Acid (KA) in order enhance its clinical application and to study its anti-colon cancer efficacy using *in vitro* and *in vivo* methods.
METHODS: Potassium koetjapate (PK) was prepared by semi-synthetic method. Anticancer activities of PK were compared with the native compound i.e., KA. MTT cell viability assay was used to obtain and compare the IC_{50} values of both the compounds. Pro-apoptotic effects of PK were assessed using caspases (3/7, 8 and 9), Furthermore, *in vitro* antitumor effects of PK were studied using hanging drop assay. Three doses of PK (25, 50, and 100 mg/kg body weight) were tested in athymic nude mice models to study the *in vivo* anti-tumorigenic efficacy of PK
RESULTS: In this study, various formulations of KA were prepared. Solubility studies revealed that resultant KA derivative i.e., PK had better aqueous solubility than the solid dispersions of KA. *In vitro* anticancer studies revealed that PK has better cytotoxic activity than KA and its solid dispersion complex towards HCT 116 cell line. Apoptosis antibody array study that PK modulated the activity of multiple proteins. It down-regulated the expression of HSP60, HSP70 and Bcl-2 proteins with concomitant up-regulation of TRAILR-1, TRAILR-2, p27 and p53 proteins respectively. Findings of hanging drop assay pointed that PK has dose-dependent antitumor potential and are well-correlated with outcomes of *in vivo* nude mice study. PK showed potent inhibition of tumor growth at 50 and 100 mg/kg, respectively
CONCLUSION: All together, outcome of present study shows that PK has anti-colon cancer activity which gives a hint about its potential anticancer application.

MPSPSC2017000112(Poster)
COMPARISON OF PROTEIN PROFILE FOR CHICKEN, PORK AND BEEF USING PROTEOMIC APPROACH

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INTRODUCTION: Adulteration is a cunning danger that cannot be seen by the naked eye unless it is tested and investigated thoroughly. In the market, people are buying processed pre-cooked meat for consuming it but they do not know the content and the sources roughly. Proteins are very unique in its own kind where pre-cooked meat protein profile can be tested by using 1D PAGE approach. This is due to pre-cooked meat is daily purchased item in the market in Malaysia.
OBJECTIVES: The study is to do this is by examine the protein profile of pre-cooked meat by using SDS-PAGE method that can illustrate the distinction of protein profile of three types of meat source that are chicken, pork and beef
METHODS: There are three types of extraction were done that is Tris(40 mM Tris) buffer extraction, TSE buffer(40 mM Tris, 1% ampholyte, 10%SDS and 100mM EDTA) extraction and sodium chloride extraction.
RESULTS: Tris extraction and also TSE extraction extracted a large amount of protein; results show that it is very hard to distinguish the protein profile or to find the biomarker for each of the sample by using sodium chloride extraction, shows that lesser amount of protein is extracted due to the selectivity of protein extraction With that, the protein profile can be compared due to the highest consistency percentage and less time and less step consuming. The enhancement of the Tris extraction and TSE extraction is by precipitating the protein by using Chloroform and methanol precipitation and ammonium sulfate precipitation.
CONCLUSION: The highest consistency for extraction methods are sodium chloride method and by comparing these two types of precipitation method, ammonium sulfate precipitation shows better results due to the consistency and reproducibility of the results as compared to chloroform and methanol precipitation.

MPSPSC2017000113(Poster)
THE USE OF TRADITIONAL AND COMPLEMENTARY MEDICINE TO CONCEIVE, DURING PREGNANCY AND THE POSTPARTUM PERIOD IN KUALA MUDA DISTRICT, KEDAH, MALAYSIA

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INTRODUCTION: Traditional and complementary medicine (T&CM) has grown its roots in the Malaysian healthcare system. Though T&CM is established worldwide, the regulations on its practices are varied with limited reliable information sources.
OBJECTIVES: This study aimed to determine the use of T&CM to conceive, during pregnancy and the postpartum period by exploring the prevalence, pattern and disclosure of T&CM use.
METHODS: in-depth qualitative interviews were carried out on 14 participants. Concurrently, quantitative surveys were done on 374 participants by using self-administered questionnaires. Qualitative data were analysed thematically while quantitative data were represented via descriptive statistics.
RESULTS: Evidence presented show that the prevalence of T&CM use is high, which has been identified in the quantitative study (n=285, 76.2%). Majority of the participants used T&CM during the postpartum period (n=237, 83.2%) and the most popular reason for use was to aid postpartum recovery (n=226, 79.3%). Although the most frequent T&CM modality used was traditional Malay massage (n=170, 59.6%), biological based therapies (n=272, 95.4%) was the highest among all five categories of T&CM. T&CM disclosure rate was 42.8% (n=122). The lack of concern by healthcare providers on T&CM use, the perception that T&CM will not disrupt conventional medicines and the assumption that T&CM is safe were the most popular reasons for non-disclosure of T&CM use.
CONCLUSION: This study reveals that women are interested in T&CM use. Hence, healthcare professionals should realise their roles in aiding the integration of T&CM as part of the mainstream healthcare system in order to optimise patient care and prevent harm.

MPSPSC2017000114(Poster)
CHARACTERIZATION OF PLASTICS FROM ORIGINAL AND FALSIFIED PANADOL ACTIFAST BLISTER PACK USING DIFFERENTIAL SCANNING CALORIMETRY (DSC)

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INTRODUCTION: Substandard and falsified (SF) medicine is a global problem and need serious action upon detection. Early detection of SF medicine in a country will reduce the fatal risk to the consumer. Fast laboratory testing is needed for effective surveillance and monitoring system of SF medicines.
OBJECTIVES: The study aim to characterize the plastics used as blister pack on primary packaging of falsified and original Panadol Actifast using Differential Scanning Calorimetry (DSC).
METHODS: Five different batches of original Panadol Actifast were purchased from the market. Each batch was analyzed using DSC. The falsified Panadol Actifast was obtained from the Pharmacy Enforcement Division and also been send for analysis.
RESULTS: The DSC thermogram for falsified and original Panadol Actifast plastics consist of two peaks with similar pattern. The original Panadol Actifast plastic exhibits two peaks at 254.92±1.13°C and at 294.5±0.89°C The DSC thermogram for the falsified Panadol Actifast consisted of two peaks at 268.98±1.17°C and at 306.84±0.90°C. The differences in melting points shows that the plastics used in original and falsified Panadol Actifast are different.
CONCLUSION: Fast and prompt decision can be made by comparing original and falsified Panadol Actifast DSC thermograms together. Falsified medicine can be detected through packaging material based on their melting point using DSC.

MPSPSC2017000115(Poster)
DRUG CONTENT AND *IN VITRO* DISSOLUTION OF CIPROFLOXACIN TABLETS

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INTRODUCTION: Counterfeit and falsified drugs are easily available worldwide and the use of these medicines could lead to treatment failure and antibiotic resistance. Quality evaluation of drug products in the market could minimise the unwanted healthcare risk and adverse effect.
OBJECTIVES: To evaluate the *in vitro* dissolution and quality of different brands of ciprofloxacin tablets that are available in the local market of India, Iran and Pakistan.
METHODS: innovator and generic brands of immediate release ciprofloxacin 500mg tablets were purchased from the authorized medicine suppliers located at India, Iran and Pakistan as well as from a local pharmacy in Hobart, Australia (reference product). A total of 15 brands were tested for content uniformity and dissolution. For content uniformity analysis, ciprofloxacin tablets were dissolved in sufficient amount of 10% acetic acid which later was diluted prior to HPLC analysis. For dissolution, the tablets was added to Simulated Gastric Fluid prepared according to United State Pharmacopeia (USP) and sample was taken at 5,10,15,20,30,45 and 60 minutes. Triplicate were used and each sample was tested twice. Dissolution profile comparison was performed using similarity factor (f_2) with $f_2 \geq 50$ indicate similarity.
RESULTS: Content uniformity analysis indicated that all the tablets were within the limits of USP (within the range of 90-110%). Dissolution testing demonstrated that all tested brands, except one brand from Iran, followed the USP requirement of not less than 80% dissolved in 30 minutes. Out of the 14 brands, four have similar dissolution profile in comparison to the reference brand.
CONCLUSIONS: Drug products purchased from authorized drug suppliers tend to have lower risk of counterfeiting. Complied drug content in 14 out of 15 brands tested, however, are not in congruent with the results of drug dissolution. Different dissolution profile could affect the *in vivo* ciprofloxacin absorption because physiological-based pharmacokinetics modelling confirmed that ciprofloxacin exhibited apparent "absorption window" in gastrointestinal tract. The inadvertent failure in drug release or dissolution compared to the reference product would yield lower bioavailability that eventually affects the desired minimum inhibitory concentration.

MPSPSC2017000116(Poster)

A COMPARATIVE STUDY OF ATTENTION AND MENTAL ALERTNESS LEVEL BETWEEN COFFEE AND GREEN TEA USERS IN KPJ HEALTHCARE UNIVERSITY COLLEGE

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INTRODUCTION: College students in today's society have become dependent on coffee due to the presence of caffeine for their daily activities. This paper focuses on the effect of two beverages which are green tea and coffee that have different phytochemical ingredients that responsible for attention and mental alertness.
OBJECTIVES: The aim of this research was to compare the attention and mental alertness level between coffee and green tea consumption among students of KPJ Healthcare University College on human biological and psychological functioning of the students.
METHODS: The study was conducted by by using a pre-post-test study design, in which forty-five (45) subjects were recruited upon obtaining their consent. The study was then carried out in two sessions, in which green tea and coffee was supplied to the participants once per week, following a seven days of wash-out period. The participants were abstained from any intake of either food or beverages that contained caffeine or L-theanine during this period. The attention and mental alertness of each subject was measured by the differences of measurement during pre-sampling and post-sampling upon consumption, in the context of blood pressure, heart rate, human benchmark tests, average aptitude test, Toronto Hospital Alertness Test (THAT) and ZOGIM-A questionnaires (i.e. at baseline).
RESULTS: From this study, it was found that coffee and green tea both have significant improvement in the test subject and it can be observed by way of testing their alertness before and after consumption. Both beverages showed a positive outcome in attention and mental alertness within 30 minutes following the intake in term of increase systolic blood pressure, shorter reaction time tests and responds through Toronto Alertness Hospital Test (THAT). However, the outcomes did not completely meet the objectives drawn out since the comparison between the two beverages cannot be determined in a significant manner. None the less, green tea did show a potentially favourable effect to the test subject's attention and mental alertness.
CONCLUSION: The present results suggest that green tea and coffee consumption is essential for focus attention and mental alertness, and a larger study is to be completed in the near future.

MPSPSC2017000117(Poster)

ANTIMICROBIAL ACTIVITY OF *MORINGA OLEIFERA* LEAVES EXTRACTS AGAINST ISOLATED HUMAN DENTAL PATHOGENS

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INTRODUCTION: Dental caries are considered as one of the key role in oral health issues. Antibiotic resistance has increased in the recent years against dental pathogens. *Moringa oleifera* is a plant with enormous pharmaceutical properties. Therefore, the developments of naturally obtained antimicrobial agents from the *M. oleifera* for dental pathogens are of interest.
OBJECTIVES: The present study was aimed to evaluate the antimicrobial activity of *M. oleifera* leaves against the isolated human dental pathogens.
METHODS: The powdered *M. oleifera* leaves were extracted by cold maceration technique. The dental pathogens were isolated from the patients with dental caries and identified using staining techniques and biochemical tests. Cup plate method was used to evaluate the antimicrobial activity of water and ethanolic extracts of *M. oleifera* against the isolated dental pathogens. MIC and MBC of both extracts were also determined.
RESULTS: The isolated dental pathogens were *Streptococcus mutans, Lactobacillus acidophilus, Klebsiella pneumoniae* and *Candida albicans*. Water and ethanolic extracts of *M. oleifera* leaves had high inhibitory effect on *S. mutans* with diameter of inhibition zones 25.7 mm and 22.3 mm respectively. The MIC and MBC values of water and ethanolic extracts of *M. oleifera* against *S. mutans* were found to be 25 mg/ml and 50 mg/ml respectively. The results were compared with Amoxicillin which showed moderate sensitivity against *S. mutans*.
CONCLUSION: The findings showed that *M. oleifera* leaves are a potential source of antimicrobial agent against dental pathogens. Further studies are required to evaluate the safety and therapeutic efficacy of *M. oleifera* leaves.

MPSPSC2017000118(Poster)
ANTIPYRETIC ACTIVITY OF *HIBISCUS ROSA-SINENSIS* STEM EXTRACT

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INTRODUCTION: Natural products are chemical composite that typically have benefits of biological activity in the discovery and design of pharmaceutical drugs. *Hibiscus rosa-sinensis* (family: Malvaceae) is an evergreen herbaceous plant in tropical countries. The plant is utilized in treating various human diseases.
OBJECTIVE: The present study was intended to evaluate the antipyretic activity of *H. rosa-sinensis* stem extract in experimental rats.
METHODS: The water and ethanol extracts of *H. rosa-sinensis* stem were prepared using cold maceration method and subjected to preliminary phytochemical screening to identify the presence of plant secondary metabolites. The antipyretic activity was evaluated by yeast-induced pyrexia model in rats. Water and ethanol extracts of *H. rosa-sinensis* stem (200 mg/kg) was orally administered to the pyrexia-induced rats. Antipyretic activity was assessed by measuring the rectal temperature of rats using a digital thermometer. The rectal temperature was recorded before and after induction of yeast and after oral administration of extracts and standard drug.
RESULTS: The phytochemical analysis exhibited the presence of alkaloids, carbohydrates, glycosides, saponins, terpenoids, flavonoids, phenols and tannins in the stem extracts. Both extracts showed significant (p<0.001) reduction in elevated rectal temperature at 4th hour. However, water extract of *H. rosa-sinensis* stem exhibited high significant (p<0.001) antipyretic activity than ethanol extract which might due to the presence of flavonoids as well as terpenoids.
CONCLUSION: The findings suggest that *H. rosa-sinensis* stem might be useful in reducing fever and is a good resource for the development of new natural antipyretic agent.

MPSPSC2017000119(Poster)
DEVELOPMENT OF POLYMERIC FILMS FOR THE EFFECTIVE DELIVERY OF TIMOLOL MALEATE IN THE MANAGEMENT OF GLAUCOMA

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INTRODUCTION: Effective delivery of therapeutic agents via the ocular route particularly for the systemic effects such as the management of glaucoma remains as a challenge for the formulation scientists and several approaches have been made to improve the local and systemic delivery of drugs to/via the eye. Timolol maleate is a β adrenergic blocker used in the treatment of glaucoma.
OBJECTIVE: To develop ocular films for the effective delivery of Timolol maleate in the management of glaucoma.
METHODS: Films were prepared using Chitosan in combination with other polymers such as hydroxypropyl cellulose (HPC), hydroxyethyl cellulose, polyvinyl alcohol (PVA), and polyvinyl pyrrolidone (PVP), using propylene glycol as plasticizer. The prepared films were evaluated for physical/mechanical properties such as thickness, clarity, uniformity of appearance, swelling index, moisture uptake tensile strength in, folding endurance and percent, pH, bio-adhesive properties, drug content uniformity, *in-vitro drug* release and drug polymer interaction studies.
RESULTS: Films prepared using a plasticizer concentration of 50% w/w of polymer concentration was found have good physical appearance. Increase in the percentage of hydrophilic polymers resulted in significant increase in the thickness, percent moisture uptake & percentage swelling. Increase in the hydrophilic polymer concentration also resulted in an increase of tensile strength and elongation at break. Maximum thickness was observed for the formulation containing Chitosan – HEC (1:2). Likewise, highest swelling index with maximum moisture uptake and highest endurance and tensile strength. A significant correlation was observed between the swelling index and the bio-adhesive strength of the polymer composites used. *In-vitro* drug release studies suggest that increase in the hydrogel forming polymers resulted in more controlled release of drug compared to hydrophilic polymers. Stability studies indicated that there was no influence of relative humidity and storage at 45ºC. Timolol maleate was completely entrapped in the polymer carrier which was evident from the IR spectra.
CONCLUSION: It can be concluded that ocular films prepared using hydrogels as film forming agents is a viable option for the effective delivery of Timolol maleate in management of glaucoma

MPSPSC2017000120 (Poster)

DOXYCYCLINE ATTENUATES COGNITIVE DYSFUNCTION ON CEREBRAL ISCHEMIC STROKE IN WISTAR RATS

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INTRODUCTION: Cerebral ischemic stroke (CIS) is a condition where there is a decrease in blood supply to the brain, which may be due to thrombosis, systemic hypo perfusion, embolism or hypertension. The lack of blood supply leads to abnormalities in the cognition and behaviour. There is an increase in the inflammatory mediator TNF-α, leukocytes and increase in acetylcholinesterase (ACHE), glutamate are found during cerebral ischemia. Doxycycline is a second-generation tetracycline antibiotic. Doxycycline also inhibits MMP-9 which have a vital role in ischemic injury.
OBJECTIVES: This investigation aimed to evaluate the effect of Doxycycline through reduction in inflammation and cognitive impairment in cerebral ischemic stroke model.
METHODS: The animals were randomly divided in to four groups of 6 rats per group as following, Group I: Vehicle (distilled water) treated orally, Group II: ischemia produced, Group III and IV: animals treated with Doxycycline 15 and 30mg/kg (p.o), induced with ischemia respectively. The middle carotid artery is ligated to induce cerebral ischemia. Doxycycline is administered for 7 days and on 7th day ischemia was induced and treatment continued till 14th day. After evaluation of behavioural parameters, the animals were sacrificed on 15th day and biochemical parameters like leukocyte count, lactate dehydrogenase (LDH), ACHE, glutamate are measured.
RESULTS: The biochemical evaluation revealed that the Doxycycline significantly reduced (P<0.05 and P<0.001) the elevated levels of AChE enzyme, glutamate and LDH, which exerted the neuroprotective effect in ischemic conditions. Behavioural parameters were also improved.
CONCLUSION: In conclusion, our investigation with Doxycycline on CIS induced rats indicated neuroprotection.

MPSPSC2017000121 (Poster)

THE PRESCRIBING PATTERN OF ANTIDIABETICS AND UTILIZATION OF CLINICAL PRACTICE GUIDELINES IN MANAGING T2DM PATIENTS IN A PRIVATE HOSPITAL

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INTRODUCTION: The advent of novel antidiabetic agents had provided a new challenge to the management of Type 2 Diabetes Mellitus in terms of the right choice of pharmacotherapy as per available guidelines.
OBJECTIVES: The purpose of this study was to probe into the pattern of prescribing of antidiabetics in a private hospital setting and document the extent of utilization of the Malaysian CPG for Management of T2DM 2015 in managing these patients.
METHOD: The retrospective study used the convenient sampling method to select 115 T2DM patients using an internally designed data collection form. The inclusion criteria were adult patients who were on antidiabetics for at least 3 months prior to sampling with or without comorbidities. The HbA1c values were used as an indicator for glycaemic control. Values 8% and below were classified as good glycaemic control.
RESULTS: The most prescribed class of antidiabetics were biguanides (Metformin) (87%) followed by DPP4 inhibitor (Sitagliptin) (61.7%) and Sulfonylureas (Gliclazide) (56.5%). The most commonly prescribed dual therapy was Metformin plus Gliclazide (47.6%) followed by Metformin plus Sitagliptin (40.5%) while the most prescribed triple therapy was the combination of Metformin plus Gliclazide plus Sitagliptin (65.8%). Poor glycaemic control was observed in majority of the patients, with a mean HbA1c of 9.329 (± 2.201). The extent of utilization of guidelines were seen in 48% of patients. 55.7% was seen in the prescribing of sulfonylurea followed by metformin (24.6%).
CONCLUSION: The utilization of CPG for the Management of T2DM 2015 in managing patients with T2DM was found to be low and this was reflected in the glycaemic control of the sampled patients.

MPSPSC2017000122 (Poster)

EVALUATION OF THE PREDICTIVE PERFORMANCE OF BLEEDING RISK SCORES IN PATIENTS WITH NONVALVULAR ATRIAL FIBRILLATION ON ORAL ANTICOAGULANTS

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INTRODUCTION: Bleeding risk scores (BRSs) aid in the assessment of oral anticoagulant-related bleeding risk in patients with atrial fibrillation. Ideally, the applicability of a BRS needs to be assessed, prior to its routine use in a population other than the original derivation cohort.

OBJECTIVE: To evaluate the performance of 6 established BRSs (mOBRI, CBRM, HEMORR$_2$HAGES, HAS-BLED, ATRIA and ORBIT) to predict major or clinically relevant bleeding (CRB) events associated with the use of oral anticoagulant (OAC) among Malaysian patients.

METHODS: This is a retrospective cohort study involving patients with nonvalvular atrial fibrillation (NVAF) receiving warfarin, dabigatran or rivaroxaban at the University of Malaya Medical Centre (UMMC) and institut Jantung Negara (IJN). Patients who experienced an OAC-associated major or CRB event within 12 months of follow-up, or who have received OAC therapy for at least one year were identified. The BRSs were fitted separately into patient data. The discrimination and the calibration of these BRSs were assessed.

RESULTS: A total of 1,017 patients with at least 1-year follow-up period, or those who developed a bleeding event within one year of OAC use were recruited. Of which, 23 patients experienced a first major bleeding event; while 76 patients, a first CRB event. All the BRSs show a satisfactory calibration for major and CRB events. Among these BRSs, only HEMORR$_2$HAGES (C-statistic = 0.71, 95%CI 0.60-0.82, $p < 0.001$), and ATRIA score (C-statistic = 0.70, 95%CI 0.58-0.82, $p < 0.001$) show acceptable discrimination performance for major bleeding events. All the 6 BRSs, however, lack acceptable predictive performance for CRB events.

CONCLUSION: These BRSs show poor to acceptable predictive performance on OAC-induced major or CRB events. An improvement in the existing BRSs for OAC users is warranted.

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