Pharmacy Clinical Course incorporating Home Medication Reviews

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Vision for Pharmacists

- To be the Health Care Professionals (HCPs) responsible for providing patient care that ensures optimal medication outcomes.

- Redirect the practice from drug-based to patient-based.

- A shift that needs to be acknowledged as early as the undergraduate years

➔Pharmacy courses should involve actual pharmacy practice experiences.

(Joint Commission of Pharmacy Practitioners), (Accreditation council for pharmacy education)

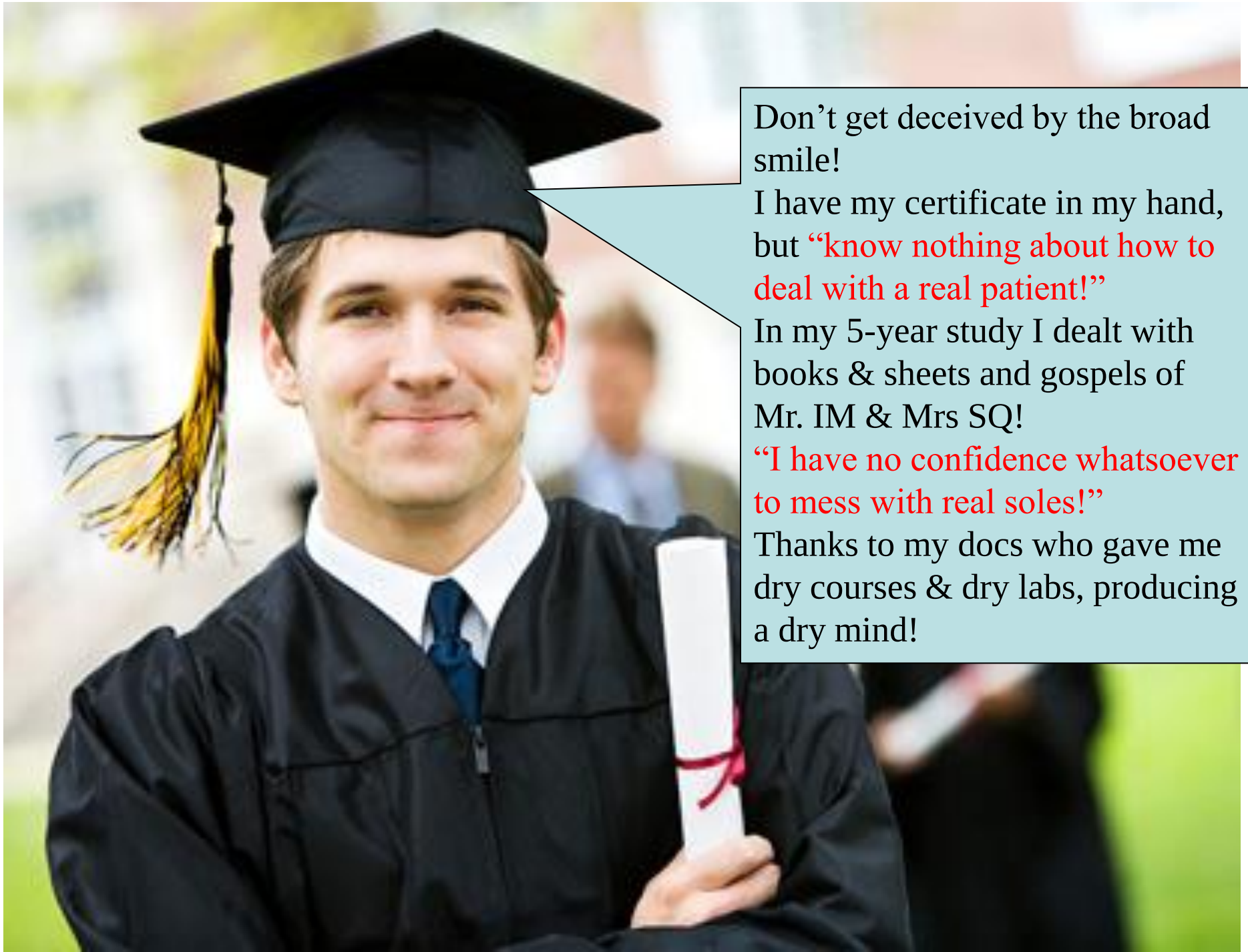
Reality

- Disconnect still exists between the tutorial room and the real patient-pharmacy environment.

➔Students unqualified to practice ‘pharmaceutical care’.

- Students dissatisfied due to the lack of actual practice experience.

(McGivney, Hall et al. 2011)


Don’t get deceived by the broad smile!
I have my certificate in my hand, but “know nothing about how to deal with a real patient!”
In my 5-year study I dealt with books & sheets and gospels of Mr. IM & Mrs SQ!
“I have no confidence whatsoever to mess with real soles!”
Thanks to my docs who gave me dry courses & dry labs, producing a dry mind!

What has been done so far to bridge the gap?

- Several studies incorporating different pharmacy practice modules into the undergraduate education.
- Students required to review patient medication, identify treatment-related problems (TRPs) and prepare recommendations.
- All proved positive in increasing students' satisfaction (subjectively).

(Bulatova, Aburuz et al. 2007),(Lawrence, Sherman et al. 2004), (Chisholm, DiPiro et al. 2003), (Turner, Altiere et al. 2005), (Agness, Huynh et al. 2011), (McGivney, Hall et al. 2011)

Limitations of the Modules

- Hospital or clinic's setting.
- Were based on patient's hospital healthcare records without actually meeting the patient.
- Not reporting back to the patient following findings/recommendations.
- Limited counseling to certain simple predetermined pharmaceutical topics.

(Bulatova, Aburuz et al. 2007),(Lawrence, Sherman et al. 2004), (Chisholm, DiPiro et al. 2003), (Turner, Altiere et al. 2005), (Agness, Huynh et al. 2011), (McGivney, Hall et al. 2011)

Limitations of the Modules ctd

- Lack of one-to-one interaction between the student and the patient.
- Interaction with the patient was supervised by a senior pharmacist.
- Recruited older patients only.
- Involved junior students- less equipped with information needed for fruitful interaction with the patient.
- Meetings with the patients were done out of their homes.

(Bulatova, Aburuz et al. 2007),(Lawrence, Sherman et al. 2004), (Chisholm, DiPiro et al. 2003), (Turner, Altiere et al. 2005), (Agness, Huynh et al. 2011), (McGivney, Hall et al. 2011)

➔ ***No independent, real, full-blown interaction with the patient***

Limitations of the Modules Evaluation

- Subjective
- Take home assignments completed by group of students

➔The student is not put **individually** in the spotlight to be **objectively** evaluated for **his** pharmaceutical care skills

➔Lower motivation for learning.

(Bulatova, Aburuz et al. 2007),(Lawrence, Sherman et al. 2004), (Chisholm, DiPiro et al. 2003), (Turner, Altiere et al. 2005), (Agness, Huynh et al. 2011), (McGivney, Hall et al. 2011)

Novelty of the current study

A) Design of a course that exposes students to a new level of **practical experience**, resolving the above-mentioned limitations.

B) Objective in addition to the subjective evaluation of the outcomes of the course.

What form of practical experience?

Based on Medication Management Review (MMR); an excellent example of optimal pharmaceutical care delivery.

What is MMR?

In MMR, the clinical pharmacist:

- interviews the patient with proper communication skills
- scrutinizes necessary information from patient's data
- assesses medical literature relevant to the patient and his medications
- defines present or potential TRPs
- synthesizes appropriately worded report with findings & recommendations to solve or prevent the TRPs.

➔ The MMR is Conducted to maximize patient benefit & safety from therapy and decrease costs and emergency department admissions.

Home Medication Review (HMR)

- A subtype of MMRs in which patients are interviewed at their own homes.

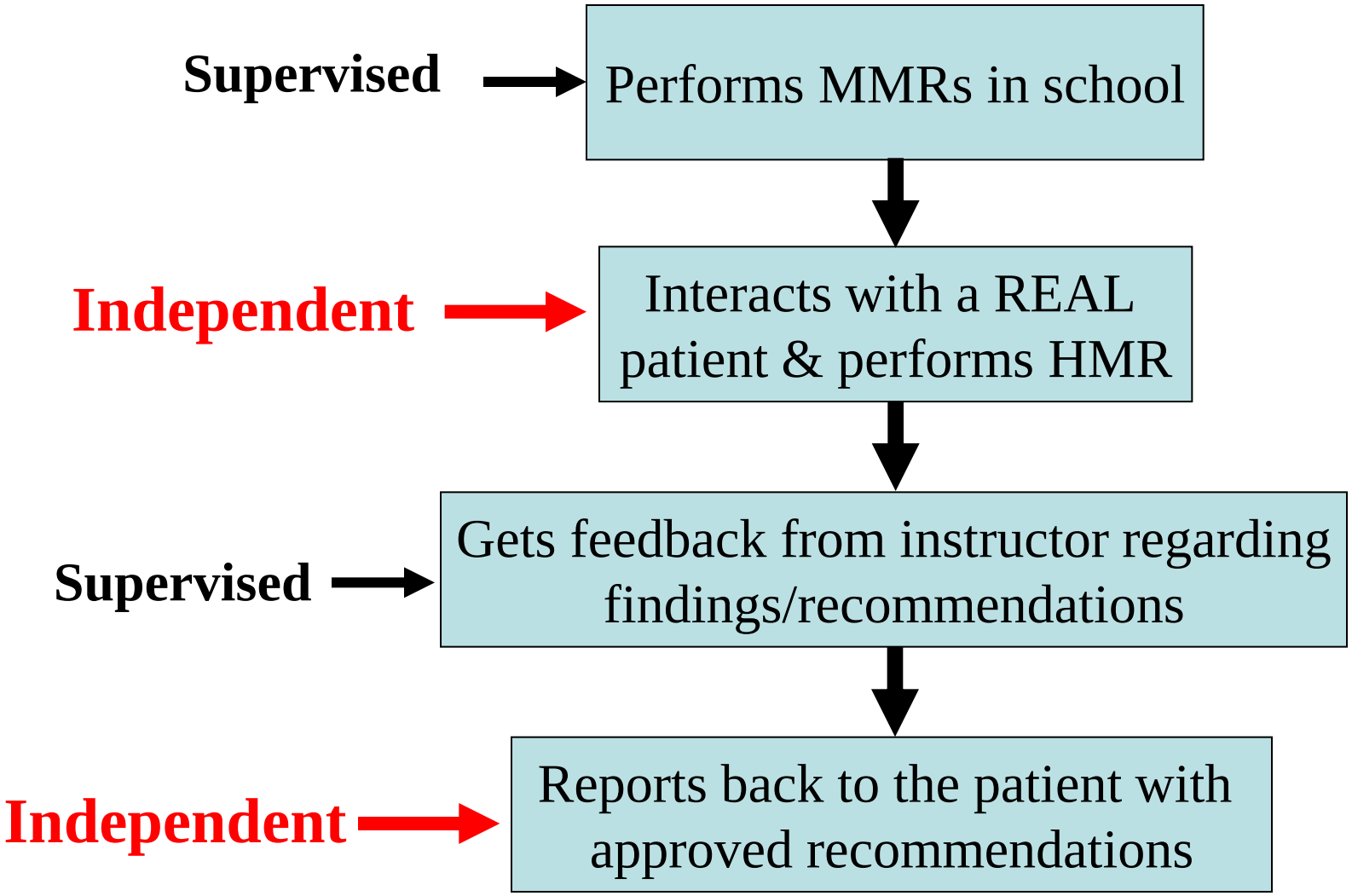
- Advantage: to recover from the patient's home valuable relevant information that could otherwise be overlooked by the HCPs.

Novel MMR/HMR Program

This presentation describes the novel MMR/HMR program developed & applied at the ASU School of Pharmacy to involve pharmacy students in real pharmaceutical practice, & the outcomes of this program.

This study has been accepted for publication in the American Journal of Pharmaceutical Education.

In the MMR/HMR course the student:



Expected outcomes of the MMR/HMR program

To have students with:

- Increased knowledge of medical conditions & medication use.
- Better communication skills.
- Ability to conduct a MMR & HMR.
- Increased awareness of how they can contribute to health care.

Course History

- Clinical Pharmacy and Therapeutics tutorials in 2009/2010.

- **Project team consisted of:**

- PhD in Clinical Pharmacy
- Masters in Clinical Pharmacy
- PhD in Pharmacology
- MD, PhD in Pharmacology.

Methodology 1- MMRs in school

- For 6 successive weeks, students were asked to perform 6 MMRs in groups of 4-6 students, then complete a report.

- Problem Based Learning (PBL) and small group discussions were the primary educational method for the in-school training.

➔promotes active learner-centered education.

- A facilitator (clinical pharmacist) was hired to facilitate the course and play the role of the patient in MMR cases, providing information to the students following their requests only.

- The MMR reports were evaluated by the course instructor & returned with extensive notes to the students.

Methodology 2- The HMR Process

- Successful completion of the six MMR cases qualified each student to go out to recruit a patient through a community pharmacy.

- Strict process measures: random calls, signatures of pharmacists, medication photographs…

- Inclusion criteria.

HMR submission form

- Patient's demographic information
- Past medical history
- Medical conditions
- Names of medications and medication history
- Dosage regimens
- Physical examinations
- Laboratory data
- Family and social history
- Adherence to medications
- **Students took BP & blood glucose levels**

HMR Process cont.

- Students identified findings & made recommendations.

Findings	Recommendations
1) Uncontrolled hypertension	Add thiazide diuretic-12.5 mg HCT once daily
2) High cardiovascular risk	Initiate aspirin 82 mg daily after control of HTN
3) Deteriorating heart function	Consider substituting roziglitazone
4) Taking iron supplement with food	Counsel on spacing from food and calcium-containing beverages

HMR Process cont.

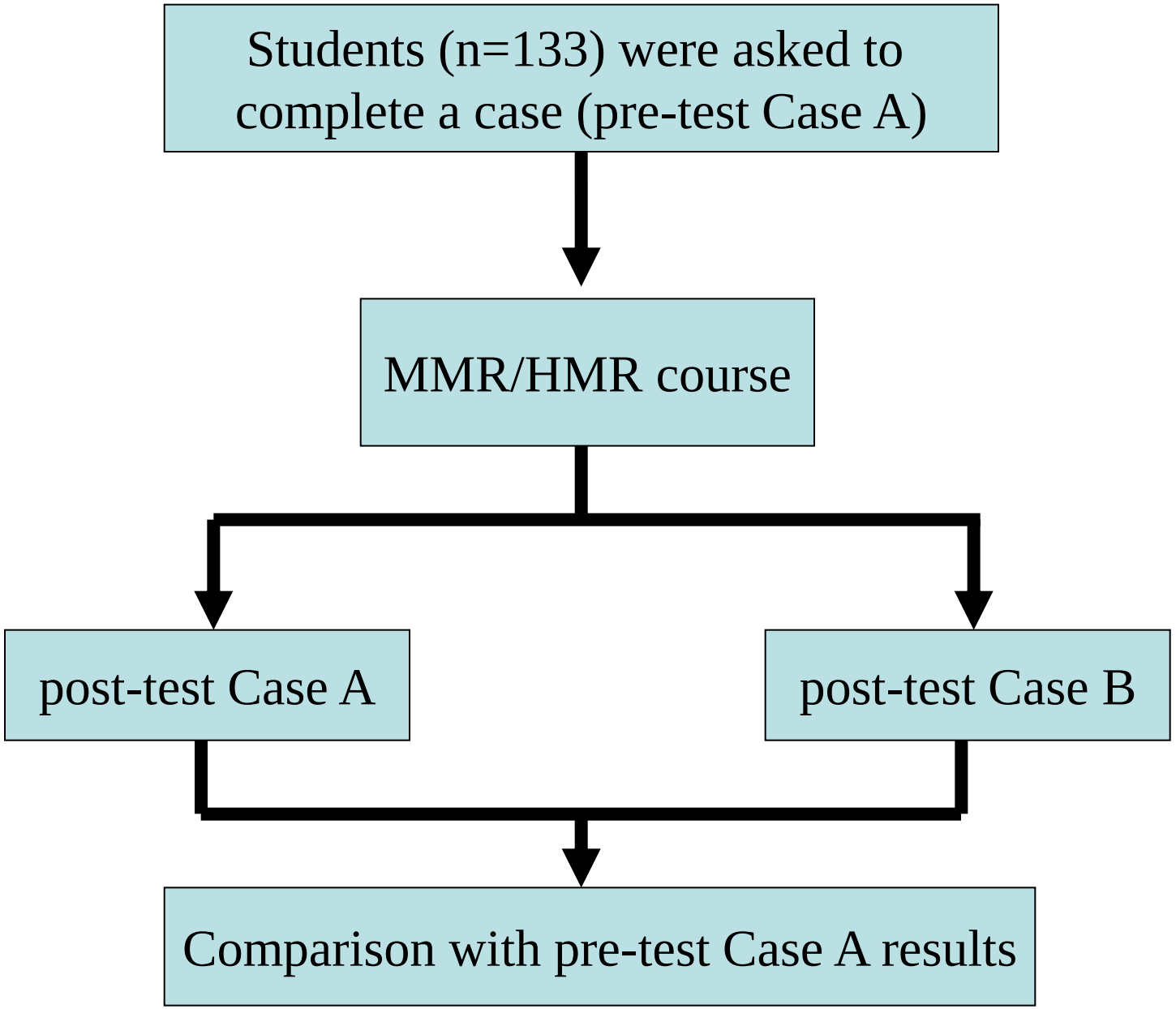
- HMR submissions were evaluated by the course instructors.

➔Written review (as for MMR) followed by one on one discussion with course instructor.

➔Students were allowed to deliver counseling to their patients regarding correct medication use and lifestyle modifications **only** after approval by the course instructors.

Evaluation of Course Impact

Objective Evaluation



Subjective Evaluation

Two subjective evaluations:

1) A questionnaire designed to reveal students' self-assessment pre-course and post-course of their:

- basic skills
- functional skills
- expected outcomes of the HMR.

2) 'Course Satisfaction Questionnaire'

Statistical Analysis

- All data were entered and analyzed by the Statistical Package for Social Sciences (SPSS) version 17.

- The test scores comparisons
  - Pre-test and post-test comparison of case A (paired T-test)
  - Post-test A and post-test B comparison : Independent sample T-test

- Proportions of students who passed the tests : Chi-Square Test.

- For all analyses, a probability (p-) value of <0.05 was considered statistically significant.

Results- Objective Evaluation

Students' performance in pre-test Case A and post- test Case A and Case B.

Objective assessment		Mean ± SD	% Passed
Case A pre-test		33.5± 19.7	18.9
Case A post-test		62.9± 15.3*	84.6*
Case B post-test		60.6± 20.7*	74.8*

***p* <0.001**

Results- Subjective Evaluation 1

Area of comparison	n	Mean score ± SD	
		Pre-course score	**Post-course score**
Basic skills			
I can obtain medical history to assess past experience from patient interview	132	2.9 ± 0.9	4.2 ± 0.7
I can provide patient education related to disease and medication	132	2.7 ± 0.9	4.2 ± 0.7
I can independently assess updated medical literature relevant to patient and his medication.	132	3.2 ±0.9	4.0 ± 0.8
I can apply all the skills learned in effective and timely manner	132	3.2 ± 0.9	4.0 ± 0.7

P <0.001 for all categories

Function			
I can integrate patient disease and drug data to determine desired therapeutic outcomes	126	2.7 ± 0.9	4.0 ± 0.7
I can identify actual/potential TRPs	126	2.6± 0.9	4.1 ± 0.8
I can provide recommendations to resolve TRPs	126	2.6 ± 0.9	4.0 ± 0.7
Outcomes- I believe that my HMR may help in			
Curing patients' disease, and/or eliminate or reduce patients' symptoms and/or slow disease progress	131	2.9 ± 0.9	4.0 ± 0.6
Prevention of disease or symptoms	132	3.0 ± 0.9	4.1 ± 0.7
Improving patients' quality of life	130	3.3 ± 2.7	4.2 ± 0.7
Reducing the cost of treatment	131	2.8 ± 1.0	4.0 ± 0.8

Subjective Évaluation 2: Course Satisfaction Questionnaire (n= 133)

By the end of the course:	Student response, n (%)		
	Disagree/ Strongly Disagree	Agree/ Strongly Agree	Mean ±SD
1) I understood clearly what I needed to do to complete the HMR	6 (5.3)	125 (94.7)	4.1±0.7
2) I had the necessary skills and knowledge to provide accurate recommendations regarding the HMR case I conducted	22 (16.6)	111 (83.4)	3.8±1.0
3) I am satisfied with the accurate and comprehensive feedback provided to me about my HMR case	10 (7.6)	121 (92.4)	4.1±0.9
4) The comments from my lecturer helped me to identify improvements in my HMR skills	11 (8.3)	121 (91.7)	4.1±0.9

Subjective Évaluation 2: Course Satisfaction Questionnaire ctd.

By the end of the course:	Student response, n (%)		
	Disagree/ Strongly Disagree	Agree/ Strongly Agree	Mean ±SD
5. I found the whole HMR process very helpful in highlighting my role a training pharmacists during undergraduate studies	16 (12.1)	116 (87.9)	4.1±1.0
6. Participating in the HMR assignments has helped me to deepen my therapeutics and clinical knowledge	9 (6.9)	122 (93.1)	4.1±0.8
7. The process of conducting HMRs and the resources made available for me during the tutorial enabled me to provide the needed feedback and recommendations	13 (10.0)	118 (90.0)	4.0±0.8
8. Overall, I found the HMR process a useful learning experience.	7 (5.3)	125 (94.7)	4.3±0.8
9. I would endorse the use of HMR in this course Unit of Study in the future	14 (10.8)	116 (89.2)	4.1±0.9

Feasibility of the MMR/HMR Program

- Time: within the course dedicated time table.
- Institutional cost: hiring a facilitator with a different qualification (clinical practicing pharmacist).
- Preparation & effort by instructor in interaction with student
- Safety issues for the students & patient: strict measures.

Conclusion

The MMR/HMR program has the potential to overcome the challenge of providing ‘actual patient care training’ through pharmacy curriculum, lack of which has been a source of students’ dissatisfaction.

Thank you

Questions ?

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Appendix 1

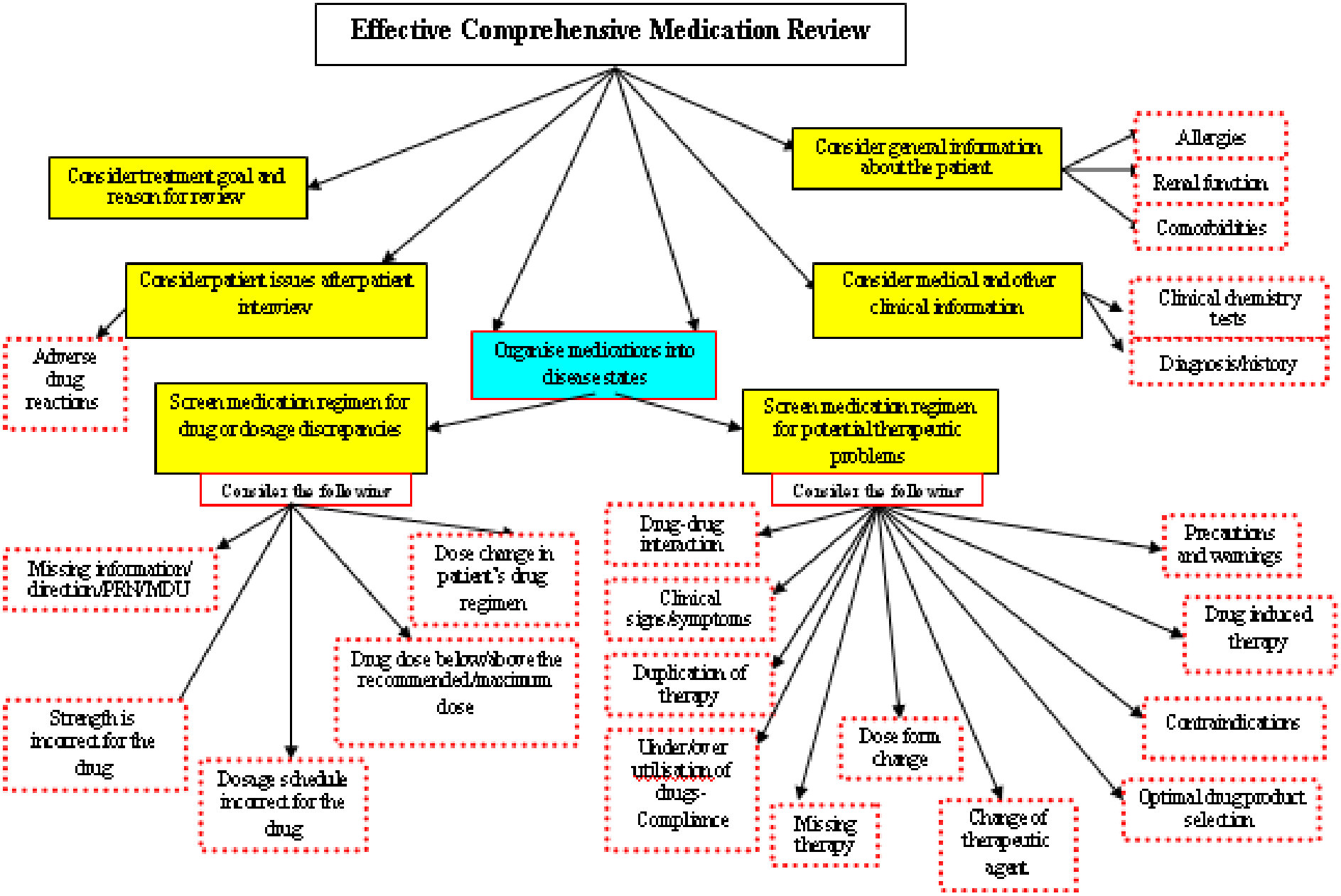
Form for assessment of Medication Management Reviews (MMR) and Home Medication Review (HMR)

Criterion	Mark	Comments
Patient Data collection form	4	
Issues regarding therapeutic goals and problems identified and Priority given	6	
Essential questions to the patient regarding the case to enable the correct completion of the MMR/HMR	3	
Findings & Recommendations (patient tailored & detailed)	6	
References	3	
Appropriate Language, Spelling & grammar	3	
Other comments		

Total Mark _____

Examples of marking guidelines that accompanied the MMR/HMR assessment schedule:

Criterion	Marking Guideline
Patient Data collection form	All clinical information should be presented in an accurate, coherent and comprehensive manner. Specifically, reduce to 1 mark if this is not evident e.g. gaps in both brand & generic section or gaps in documented indication.
Issues identified and Priority given	Issues should be relevant to the patient, clinically significant and prioritised. They should reflect that a systematic checking process has been used for all drugs and address drug/ dose issues as well as therapeutic issues such as drug/disease interactions , drug-drug interactions etc. Specifically, reduce to 2 marks if there is no obvious system in place to identify important issues. Good systems might link all pathology issues together, HMR issues together etc. Also reduce to 2 marks if no real attempt at priority is made
Questions to the patient	Questions asked of the patient should be relevant, patient tailored, appropriately phrased (favouring open ended questions when appropriate) and comprehensive. Reduce to 1 mark if no specific questions are asked or if two or more of the following general question areas are missing. Please highlight missing areas in feedback to student. • perceived efficacy of medications • perceived side effects of medicines • what they are taking their medicines for


Effective Comprehensive Medication Review
Consider treatment goal and reason for review
Consider general information about the patient
Allergies
Renal function
Comorbidities
Consider patient issues after patient interview
Consider medical and other clinical information
Clinical chemistry tests
Diagnosis/history
Adverse drug reactions
Organise medications into disease states
Screen medication regimen for drug or dosage discrepancies
Screen medication regimen for potential therapeutic problems
Consider the following
Consider the following
Missing information/ direction/PRN/MDU
Dose change in patient's drug regimen
Drug dose below/above the recommended/maximum dose
Strength is incorrect for the drug
Dosage schedule incorrect for the drug
Drug-drug interaction
Precautions and warnings
Clinical signs/symptoms
Drug induced therapy
Duplication of therapy
Contraindications
Under/over utilisation of drugs- Compliance
Dose form change
Optimal drug product selection
Missing therapy
Change of therapeutic agent

Important details

- Initially, and after pretest Case A, gaps in knowledge and skills required to conduct the MMR/HMR program were identified by asking the students to conduct pseudo-patient interviews during the tutorials.

➔group tutorials to address these points of weakness.

- Home interview was designed to take an hour in total.
- Contact information of patients' physicians.
- Patient confidentiality.