PRESENT STATUS AND FUTURE PROSPECT OF DENTOMAXILLOFACIAL RADIOLOGY IN INDONESIA

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• Dento maxillofacial radiography is one of the most valuable tools used to perform further examination in modern dental health care.

• However, the use of radiography must be carefully managed since x-radiation has the potential for damaging healthy cells and tissues.
It is generally accepted that there is no safe level of radiation dose.

No matter how low the dose used, there is always a probability of a harmful effect.
Diagnostic imaging in dento maxillofacial radiology (dmfr) that plays more and more important role in medicine as well as in dentistry has been remarkably developed.

With regards to the modern system → the most promising area of development in dentistry seems to be the digital radiography and the use of digital imaging.
The increasing use of this modern equipment is significant, but until now they are still limited in large cities hospitals and private dental office.
Although all radiographic imaging has a potential hazard from ionizing radiation, the diagnostic information could be obtained non invasively \( \rightarrow \text{further examination of choice} \)
With the advancement of computer technology, radiographic data could be the only diagnostic information needed in certain cases.
Professional association:
International → IADMFR

In Indonesia, the dento maxillofacial radiology field has just been recognised, and has had its own professional association (IKARGI) in 2004.
Public dental schools provided with digital dmf radiography are about 80%, in contrast with the public health services.

→ so the use of this digital radiology is still mainly for research and limited service rather than for wide public service.
The digital radiography has an advantage of low radiation exposure, but with the use of computer as an advanced technology.

unique problems continually occur
(e.g., Radiographic data manipulation in research)
The main obligations of this association is to develop dento maxillofacial radiology in Indonesia

- establish the professional postgraduate study program (specialty in dmfr as indicated by the international association)
- takes part in every rules/regulations concerning the utilization of radiation in dentistry
  - socializing the rules and regulations
- conduct/encourage research to overcome the limitation of modern digital imaging availability in this country
- updates and gives their professional judgments in research studies using radiographic examination
The increasing use of diagnostic imaging modalities have to be well managed –> since the year 2000, the new rules and regulations concerning radiation protection has been implemented.
IN EDUCATION

The three main components in teaching-learning system:

*Objective
  → what relevant competencies graduates are supposed to master

*Process

*Evaluation/application

The changing paradigm of teaching method from teacher centered to student centered active learning has able the dento maxillofacial radiology to be taught in different way.

Based on the competences expected, the learning method of *dmfr* were then integrated into every other field connected.
This active learning method with PBL in FKG UI has been proven more effective.

→ the average score has increased

→ the knowledge and skill of dmfr learnt, is more efficiently applied in integrated clinical work and research studies.
To gain competency in radiographic techniques

* Showing the learning materials
  → first step to learn what they have been read about
* Demonstrating the actual action of work
  for example the film placement
* Doing the action amongst students themselves
* Analyzing and discussing their achievements
* Applying in created scheme → practice how to make the correct justification in radiographic examination
  → thus helps students avoid as many pitfalls as possible
Competency in proper and correct radiographic interpretation:

- Integrated teaching material with other clinical competencies
- In order to expose students with the real setting activities, learning process through integrated problems created coping problems comprehensively
- Evaluate and discussing their results

Evaluation of their application:

- in integrated clinical work
- in research studies
• We have been striving to do over these past several years to present part of the radiographic interpretation related to other fields.

e.g., the radio-anatomy ➔ considerably more appealing to the students from the standpoint of practicality

➔ students can learn to a great extent in a more real setting condition.

In the end, graduates are expected to be ready to work comprehensively, either with the patients or in research studies ➔ with radiation safety always borne in their mind ➔ better public service
IN RESEARCH

more than 60% of undergraduate and postgraduate research studies conducted

→ involving the radiographic examination.

As happened with the development of other fields → many studies showed that scrutinizing a very simple dental radiograph enable the dentist to extract more than the diagnostic information needed → dentist could be the one suspecting a systemic condition or even malignancy occurred.
Many studies in this field or related and involving this field that performed in collaboration with other fields in dentistry, have also been conducted in Indonesia.

Research studies with radiographic approach that conducted properly a valuable contribution to science and public service.
For example, by studying the image characteristic of a single radiographic imaging in a proper and correct way, a dentist could make a recommendation to have a more specific examination concerning general or systemic condition of a patient (e.g., suspecting malignancy, osteoporosis, blood diseases etc).

And thus will be beneficial for the patient as well as for the dentist to have a careful consideration before treating the patient.
IN PUBLIC SERVICE

According to the data available, public dental health services in Indonesia provide only the conventional dental x-ray and certain public hospitals with extra oral x-ray machines (with more information that they are not working well) → there are still standard public health services in Jakarta that have not been provided with dental x-ray machine
The development of direct digital radiology in dentistry has its essential benefit for the patient → the significant low radiation exposure

Although radiographic screening is prohibited, completing the medical record with digital radiograph could be recommended especially for those high accident risk population
The amazing development of some dental services, need radiographic data e.g., in dental implant

- by using proper radiograph: maximum diagnostic information for all stages in performing the treatment

  to prevent the patient from being the target of malpractice as well as to prevent the dentist from being sued as conducting malpractice
In general usage of x-radiation, most of the dentist are still ‘blind’ or maybe ‘ignoring’ the harmful effect especially to human being → the fact that more than 75% dentists still do not have special license that could only been earned only after an inspection of the radiation safety had been fulfilled → to make sure that with the radiation used, the patient and the worker as well as the environment is safe
The increasing use of radiation sources has been controlled and regulated by the government → dentist has to be well informed about this.
The government rules UU No. 10 about radiation safety and hazard, followed by the government regulations PP No. 63, 64 and other specific BAPETEN regulations has been applied for several years → dentistry has been included and involved.
Future prospect:
The fact that a very large number of population and the variety of dental problems or diseases in the maxillofacial region in Indonesia the development of dento maxillofacial radiographic imaging will become more important in the future
With the advancement of knowledge and technology, dento maxillofacial radiology that played more and more important role in dentistry has to be used in a safe and responsible way.

In Indonesia:

Have to be well anticipated to meet all the public needs as well as being in the right corridor of the rules and regulations in radiation safety. The professional association and the educational institution.
With the adjustment in teaching strategy of dmfr in accordance with the role of professional association in establishing the right ‘track’ to develop dmfr

the increasing use of radiation in dentistry due to the advancement of knowledge and technology, will be well anticipated.

In the end this increasing role of dmfr could be applied properly → meet and protect the public need
Thank you for your kind attention.