Crossing the Digital Divide in Journal Publishing:

전자학술지와 인쇄본 발행 업무의 일원화

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Agenda

- Journal Publishing/Production Workflows
- Journal Editing Workflows
- Recommendations
- Production Output Examples

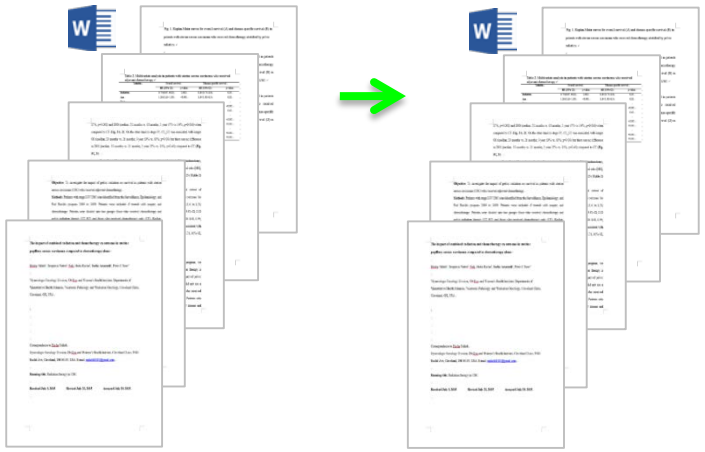
Journal Editing & Publishing Workflows of most journals currently published in Korea

Manuscript Accepted

Editing & Preparation

Production

Distribution



Online

Digital Divide

Print

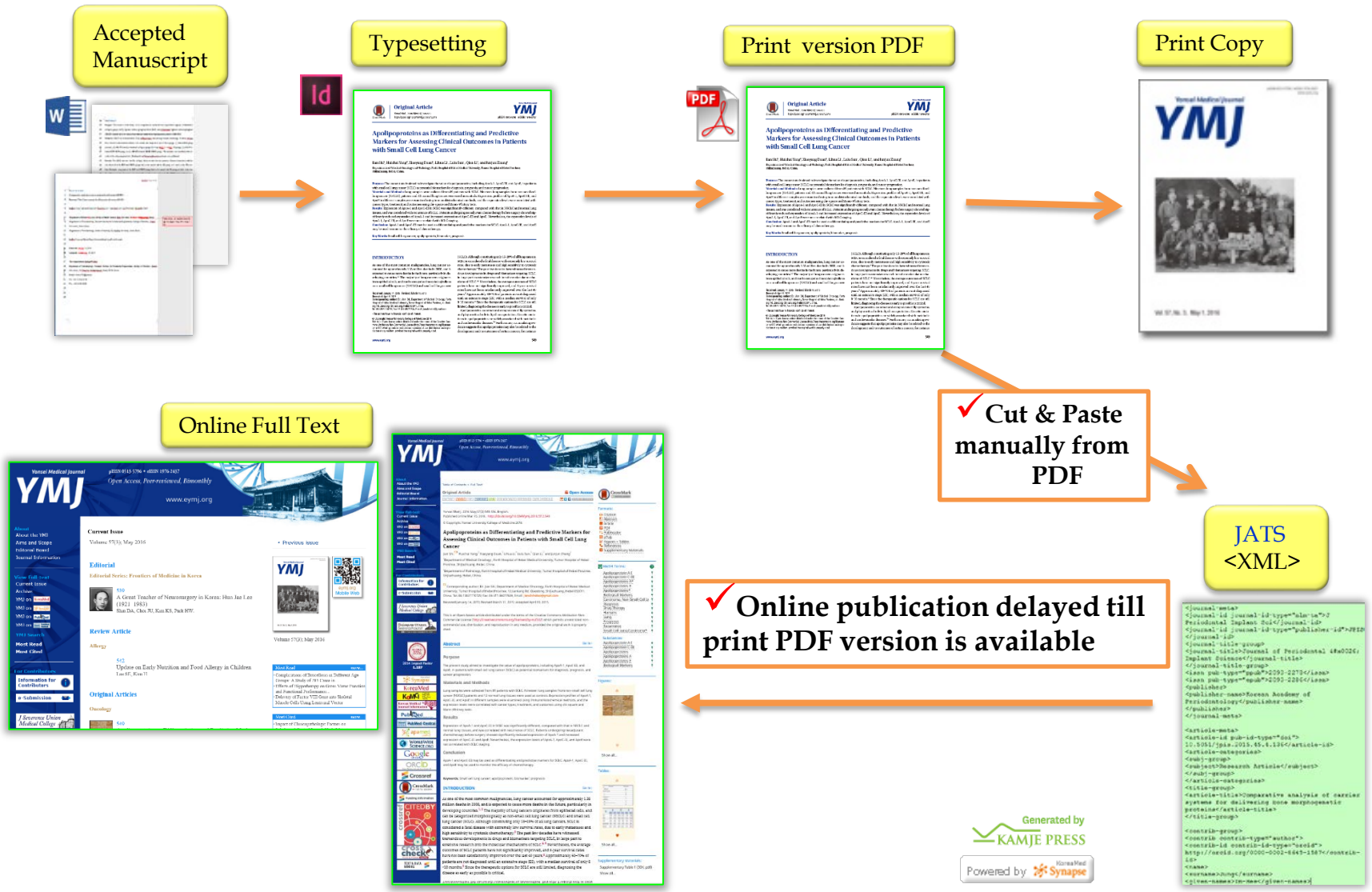
For efficient and fast publishing

- 이원화 되어 있는 학술지 발행 과정 개선은 당면 과제
- Problems → To be resolved
  - Print publication, then online (Separate processes)
    → E-journal/Print at the same time (One workflow)
  - Manual processing → Automatic generation
  - Human Errors → Machine/Systematic detection (error prone → error free)

Time, Human resource and Cost savings

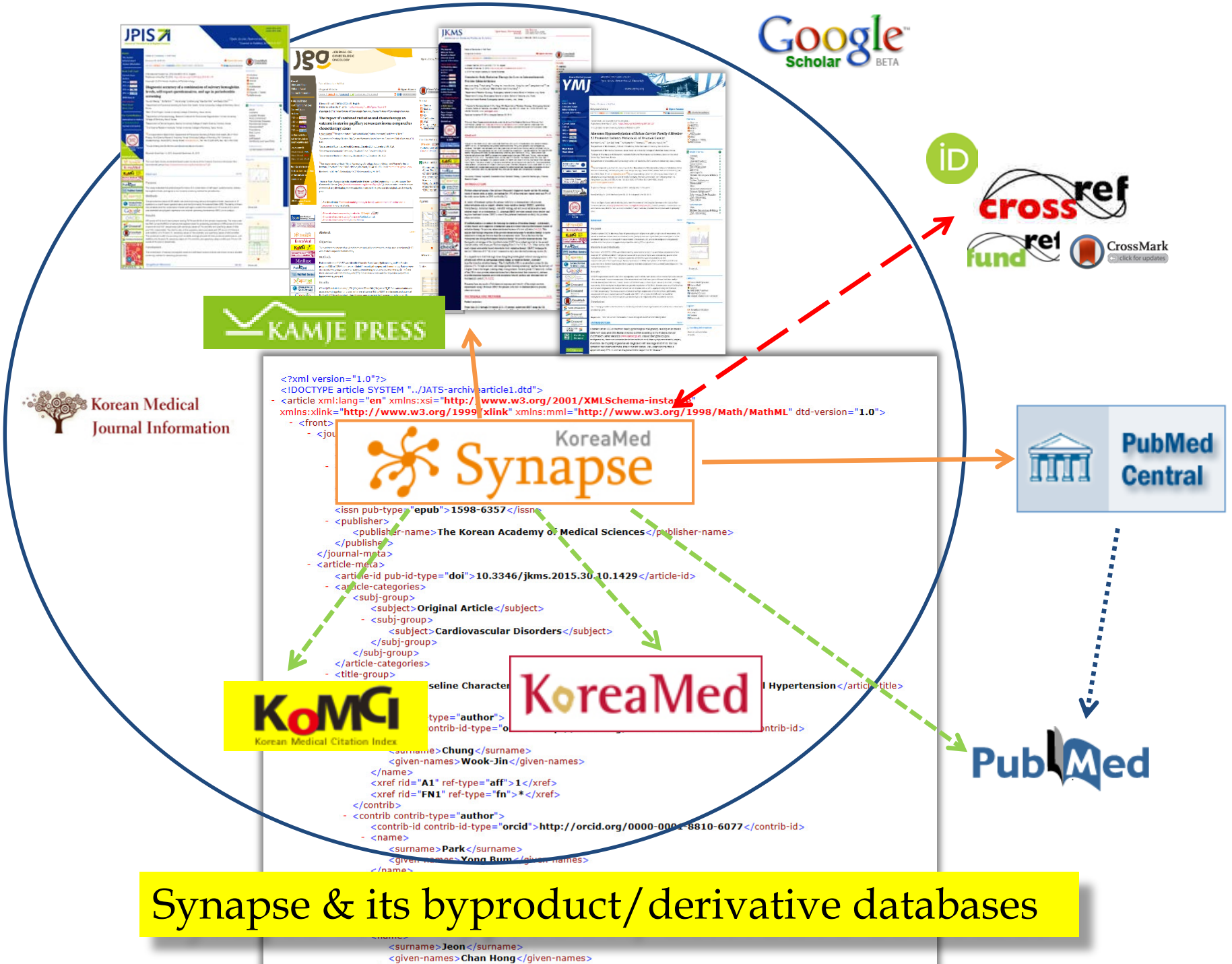
Journal Publishing/Production Workflows

Journal Publishing/Production Workflow (1): From Final Print version PDF to JATS XML

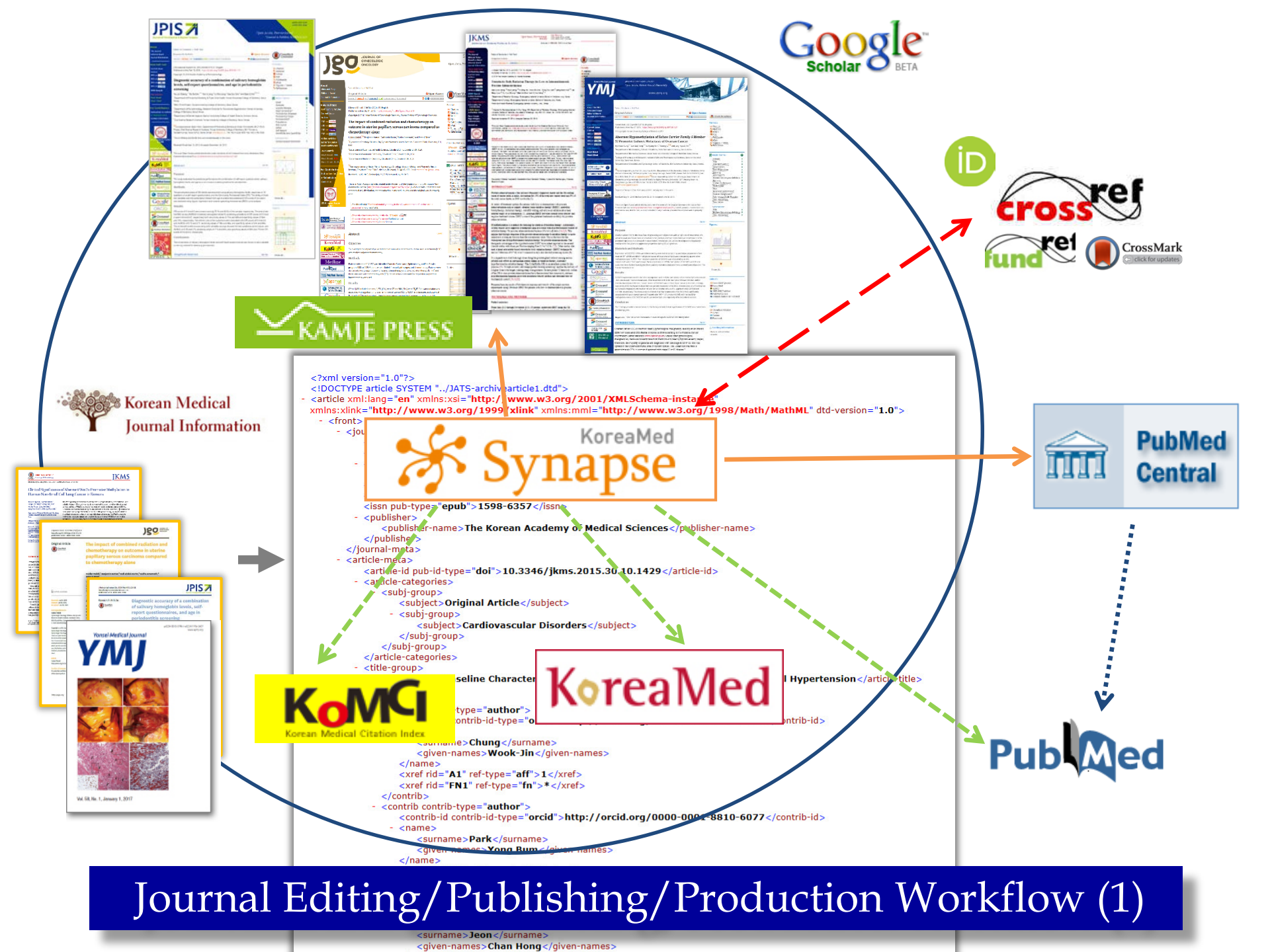


From Final Print version PDF to JATS XML

- XML file production from print version PDFs
- Manual cut & paste
- Slow, Tedious, Error-prone
- Online publication delayed till print PDF version is available
- Current publishing workflows for most Korean (medical) journals



Synapse & its byproduct/derivative databases



Journal Editing/Publishing/Production Workflow (1)

Journal Publishing/Production Workflow (2): One JATS XML for Online and Typesetting

Accepted, Fully edited Manuscript

JATS <XML>

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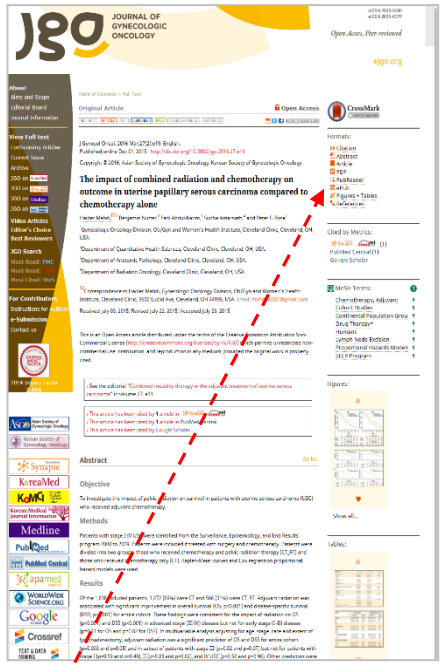
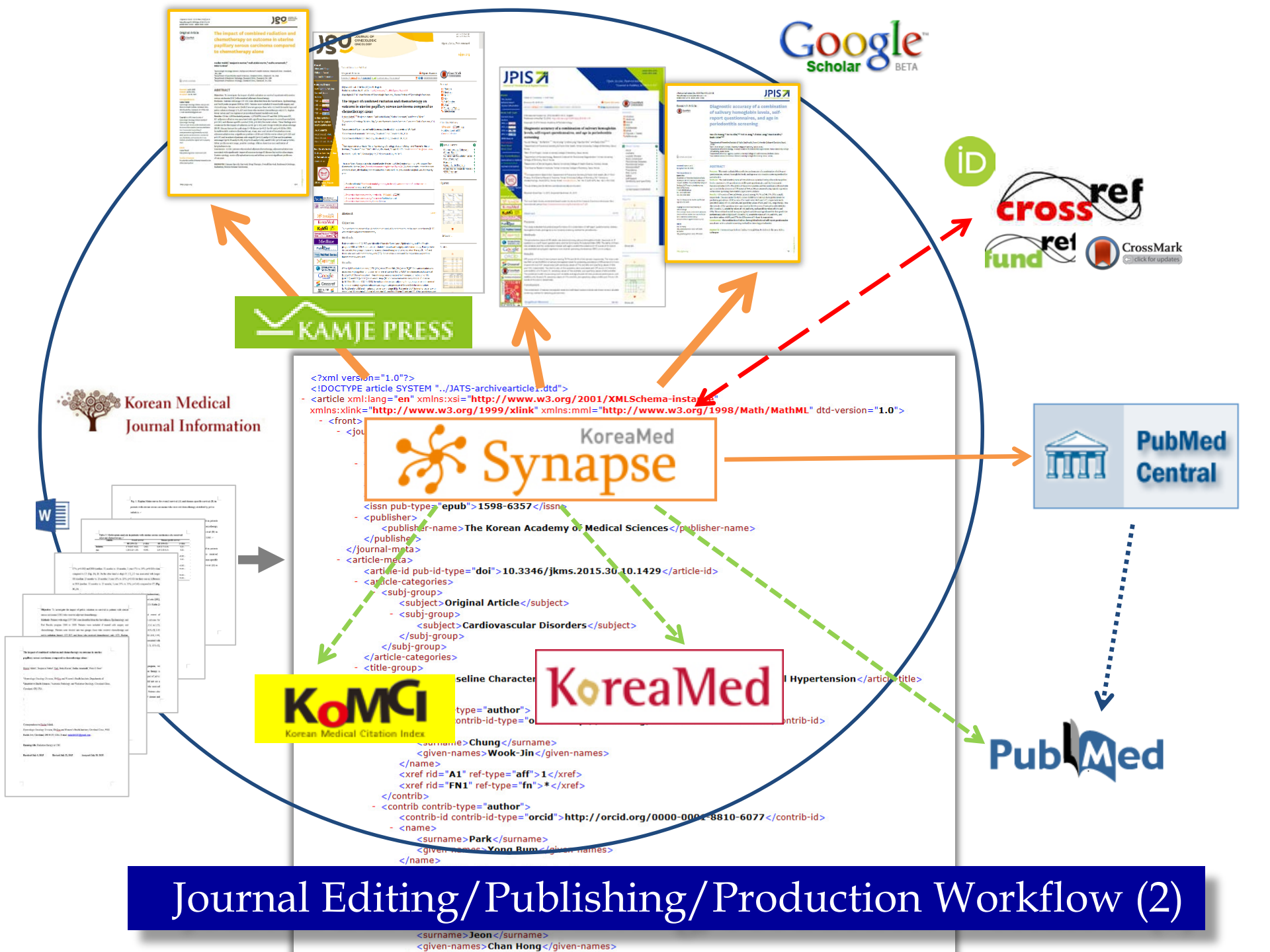
Online Full Text



Interactive PDF



Journal Editing/Publishing/Production Workflow (2)

Journal Publishing/Production Workflow (3): One JATS XML for Online, Typesetting and Print

Accepted, Fully edited Manuscript

JATS <XML>

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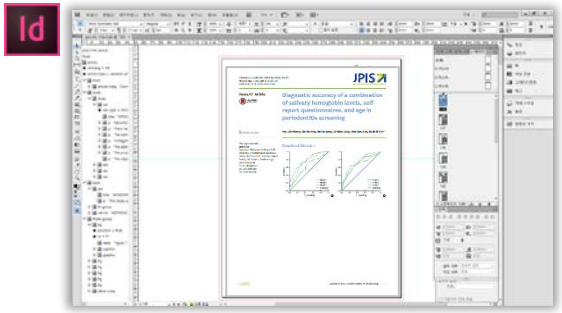
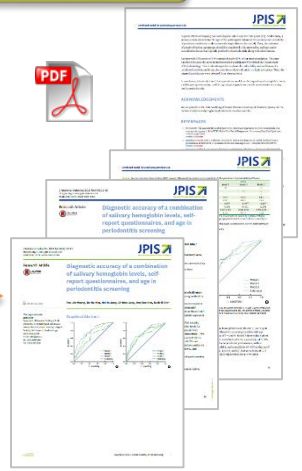
Online Full Text

Interactive PDF





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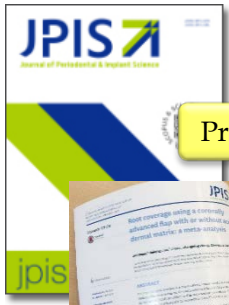
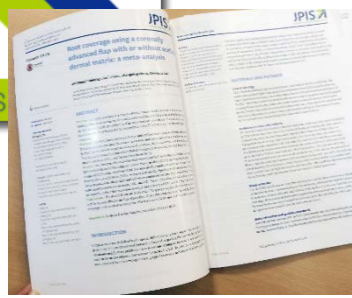
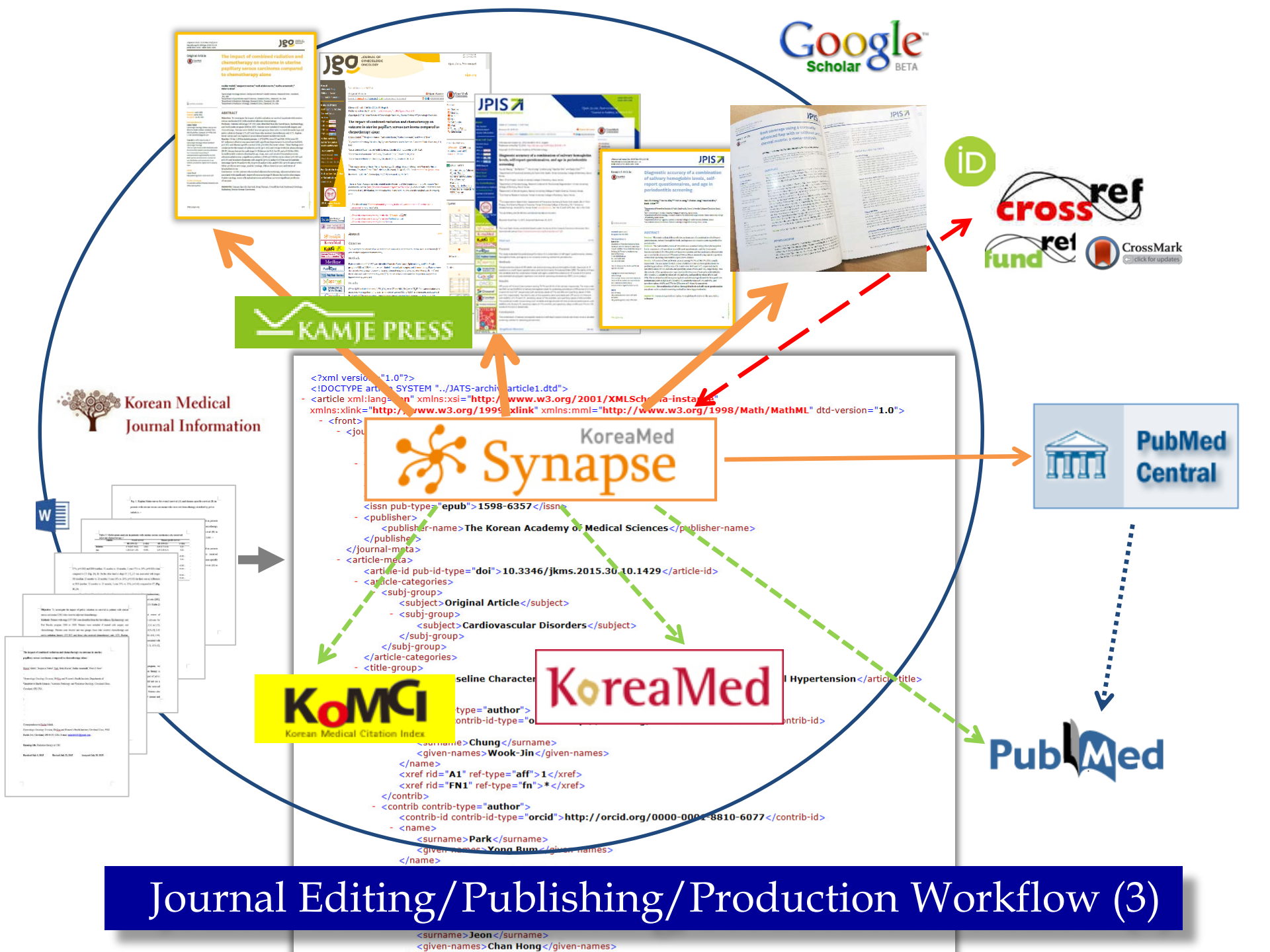






Journal Editing/Publishing/Production Workflow (3)

One JATS XML for Online and Typesetting

- JATS XML conversion from "Author Manuscripts (Word file)"
- Online Full text from JATS XML
- At the same time, automated generation of (InDesign) Typesetting/Layout file from JATS XML

  → Online Interactive PDF

  → Print

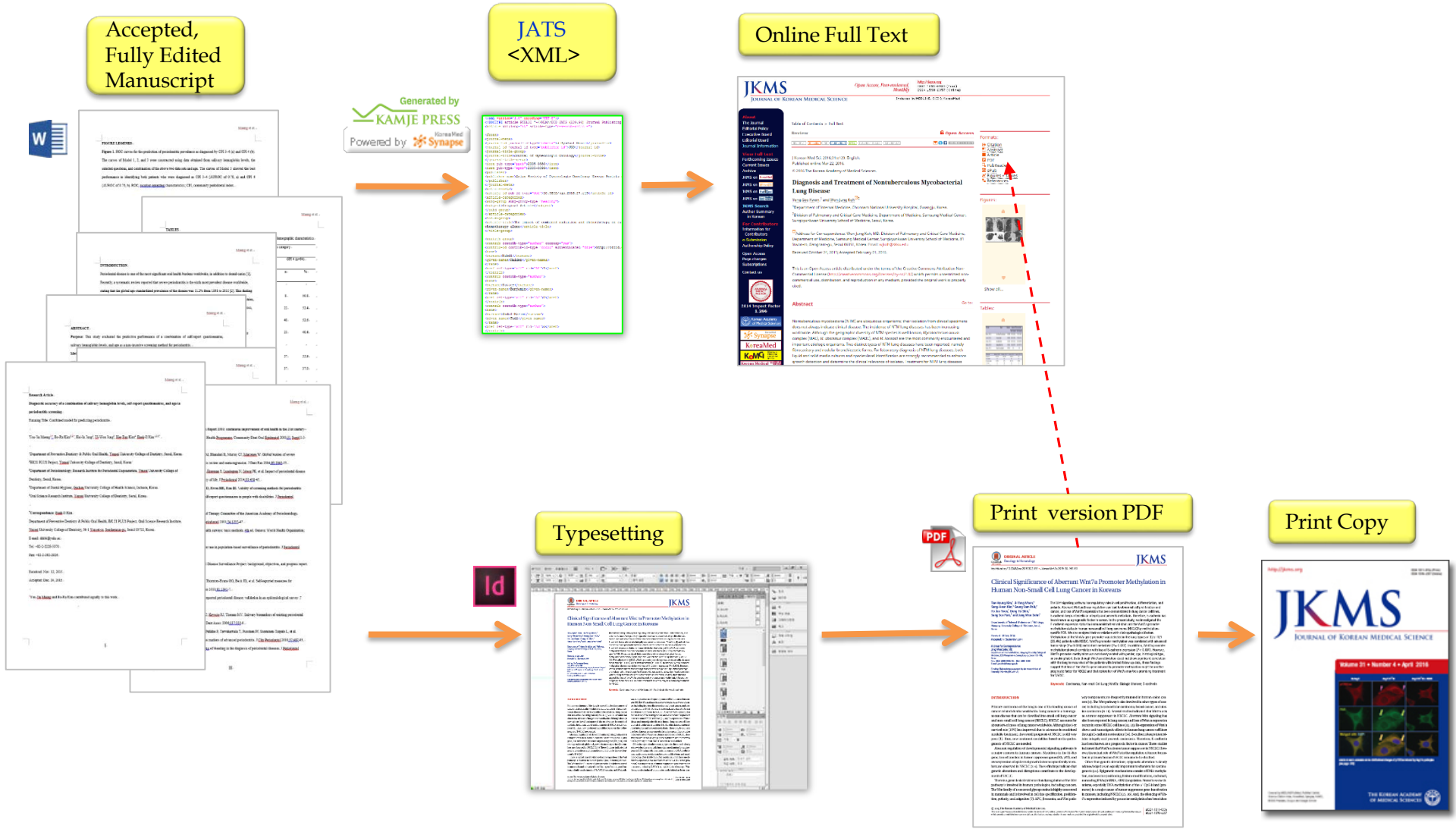
More Efficient Publishing Workflows

- No more cut & paste of texts

  Automated conversion of manuscript texts to JATS XML
- Speedy
- One-point (integrated) publishing
- E-journal only

  E-journal and Print
- Interactive PDF (vs. static PDF)

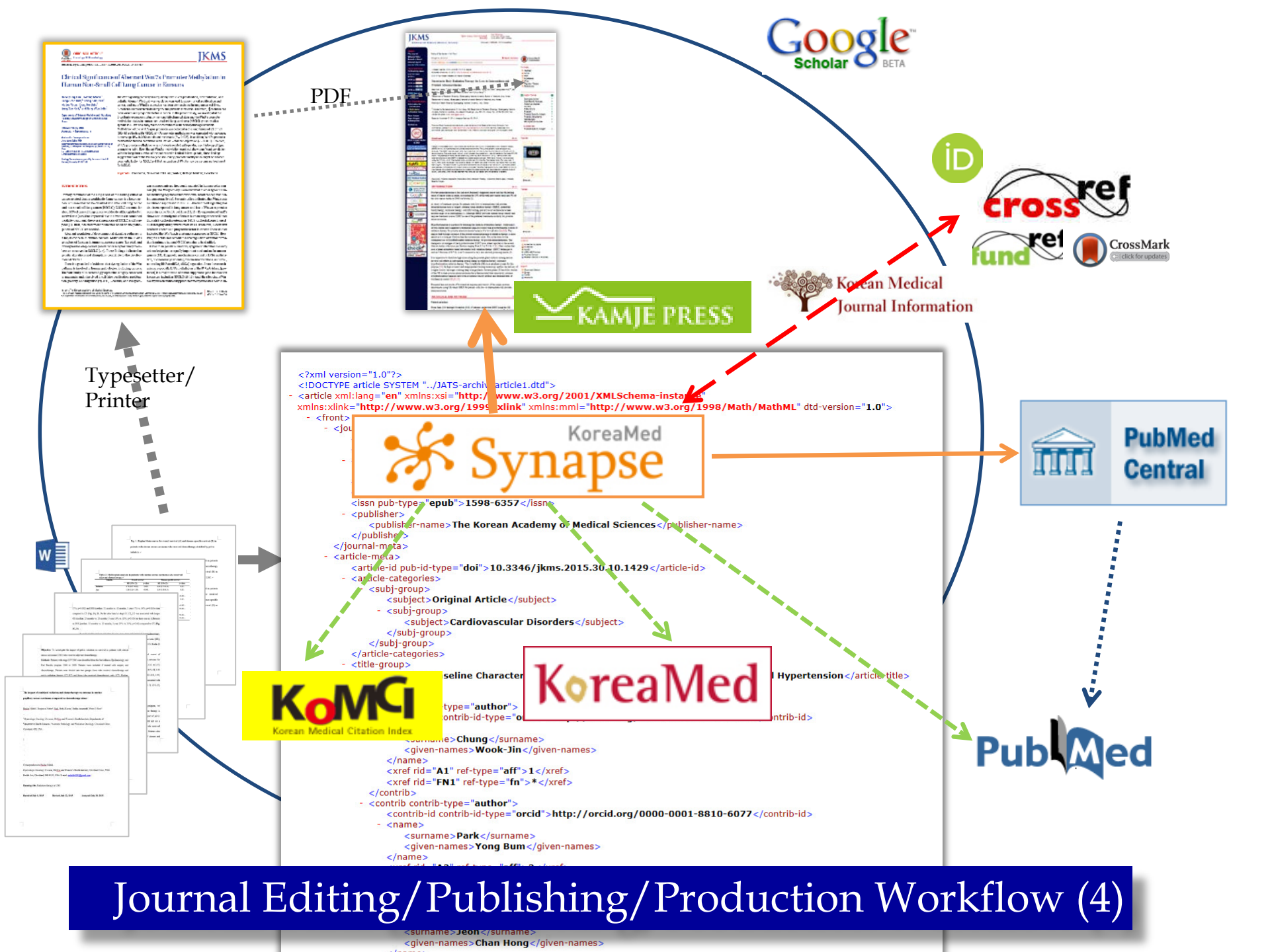
Journal Publishing/Production Workflow (4): Separate Processing of Online and Print versions



Separate Processing of Online and Print Versions

- Online version and Print version published as two separate processing from the same fully edited manuscript
- Version Control problems

  Any changes made on one side should be reflected on the other side



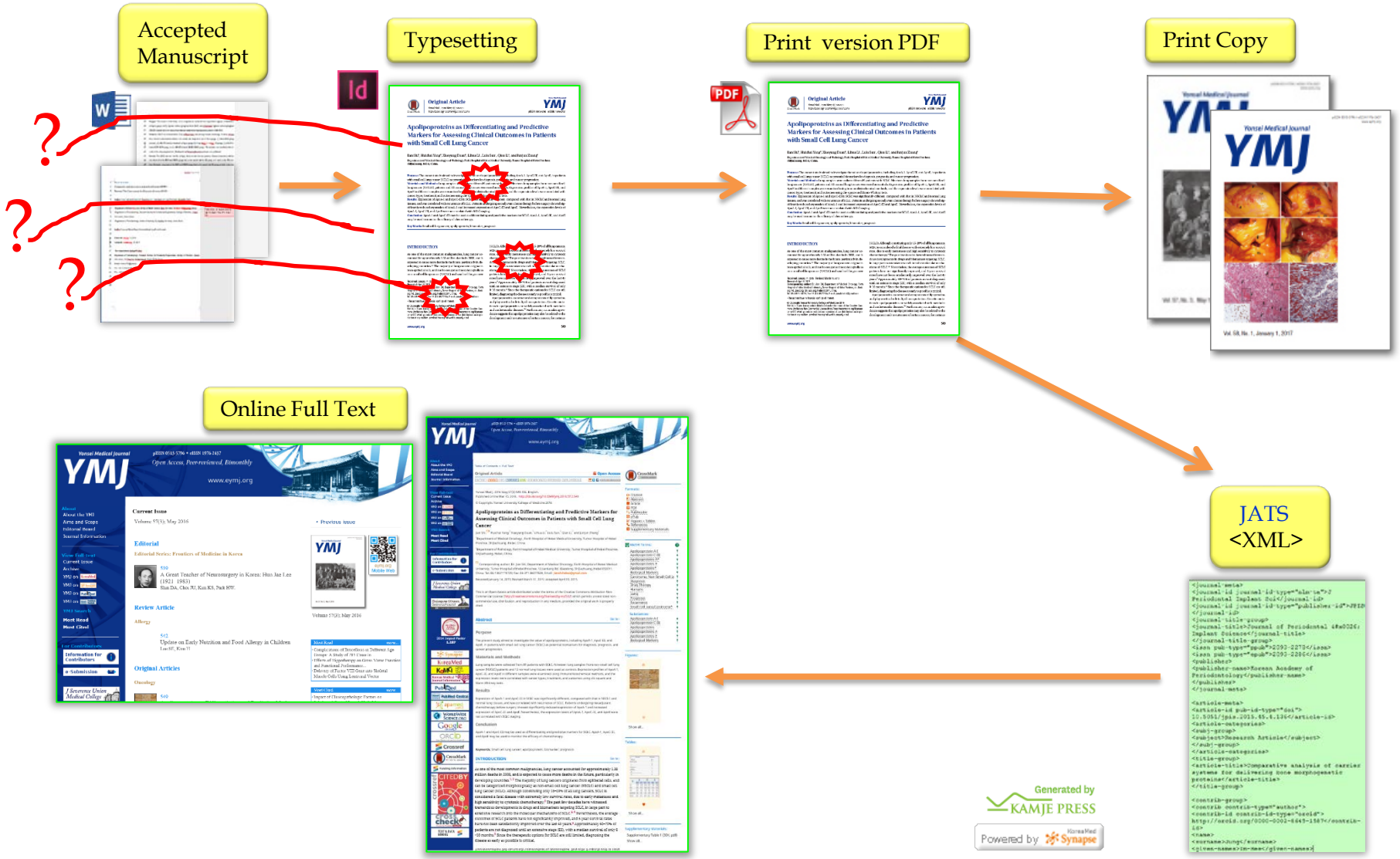
Journal Editing/Publishing/Production Workflow (4)

Journal Editing Workflows

Any changes made after XML file production/InDesign Typesetting

- Require revisions on XML files to regenerate Online Full text and PDF
- Or, two revisions both on Online Full text (XML) and on PDF
- Better to have all the manuscript editing done before hands (before XML production)

Journal Editing/Production Workflow (1): From Final Print version PDF to JATS XML



Journal Editing/Production Workflow (2): One JATS XML for Online and Typesetting

Accepted, Fully edited Manuscript

JATS <XML>

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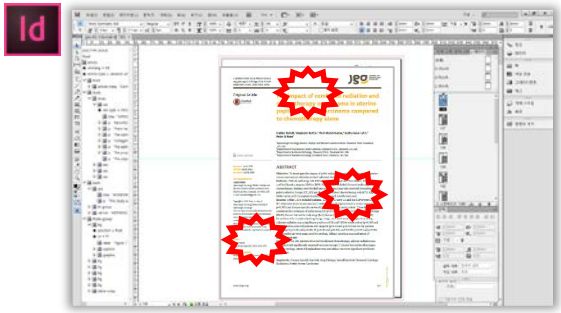
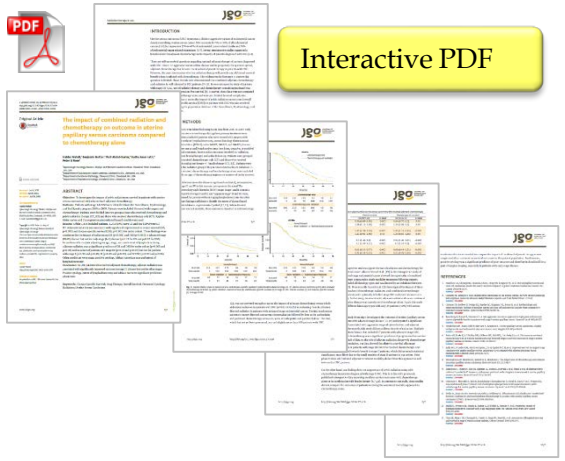
Online Full Text





Interactive PDF

Journal Editing/Production Workflow (3): One JATS XML for Online, Typesetting and Print

Accepted, Fully edited Manuscript

JATS <XML>

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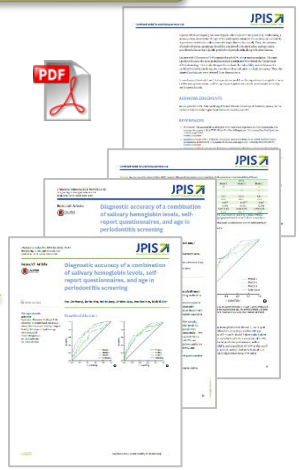
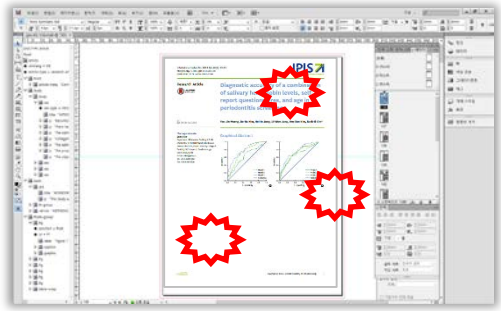
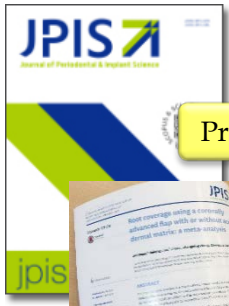
Online Full Text

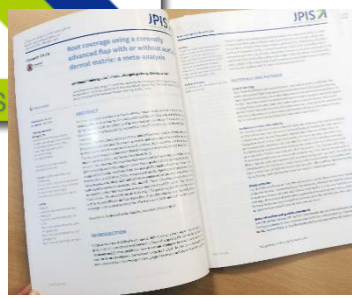
Interactive PDF



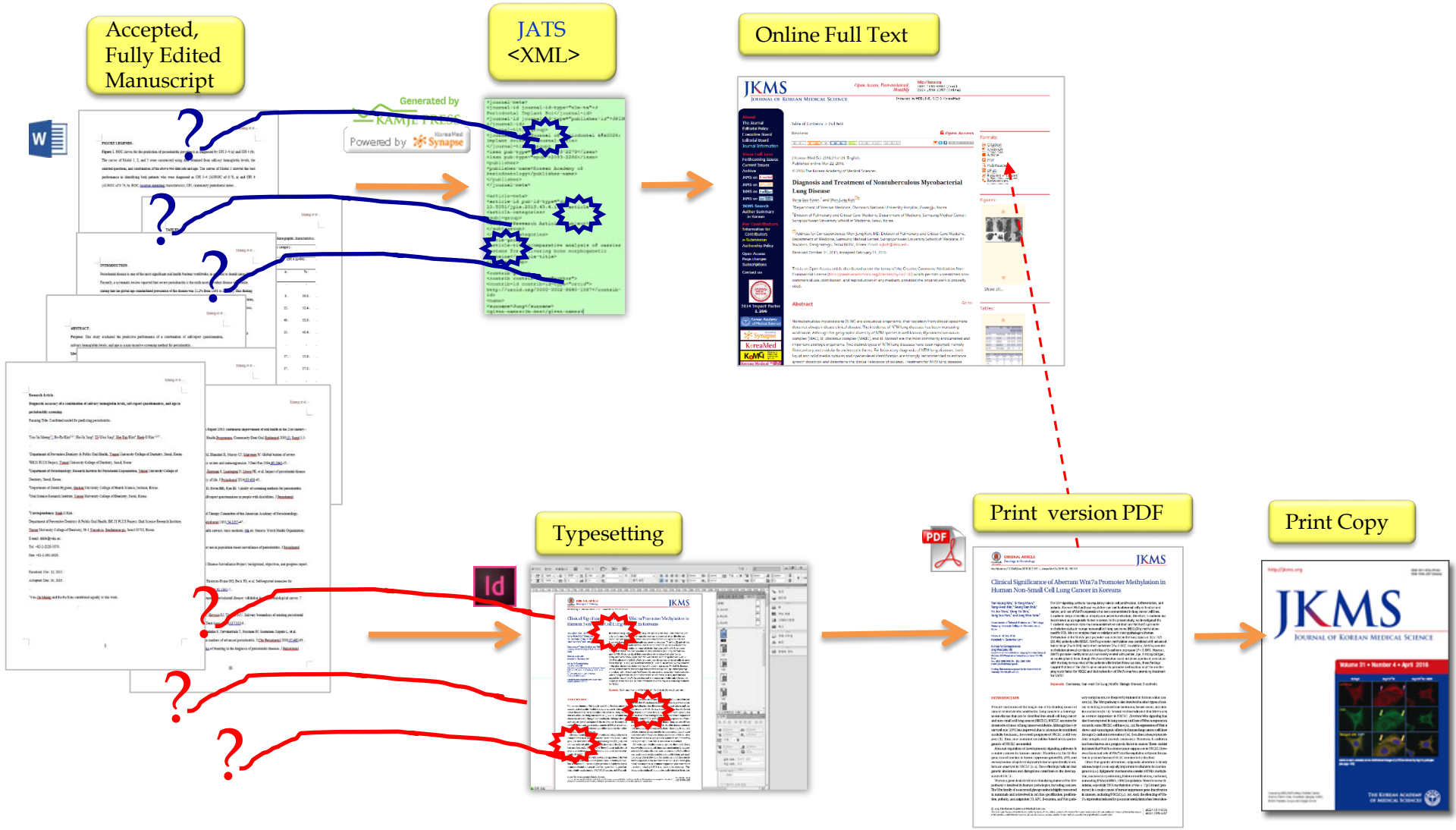


Print Copy





Journal Editing/Production Workflow (4): Separate Processing of Online and Print version



Modified Editing Workflows: Fully Edited "Final" Manuscripts

Accepted Manuscript

Manuscript Editing

English Correction

Author Proofreading

Recommendations

Recommendation (1)

- Prepare fully edited “Final” manuscripts
  - Formats
  - Copy editing
  - Manuscript editing
  - English correction
  - Author proofreading

Recommendation (2)

- Produce JATS XML file from fully edited manuscripts
- Automate JATS XML file production and processing
  - to reduce manual cut & paste work
  - to detect any systematic, technical errors

Recommendation (3)

Once a proper JATS XML file is produced

- Generate both online version and PDF (via InDesign) version of full text using the same XML file.

Interactive PDF with internal and external links can be made from fully marked up XML files.

Production Output Examples

Journal Publishing Workflow (2) & (3):
One JATS XML for Online and Typesetting

JPIS
Journal of Periodontal & Implant Science
pISSN 2093-2278
eISSN 2093-2286
Open Access, Peer-reviewed
"Covered in PubMed, SCIMUS & SCI"

Research Article Open Access

J Periodontal Implant Sci. 2016 Feb;46(1):10-21. English.
Published online Feb 15, 2016. http://dx.doi.org/10.5051/jpis.2016.46.1.10

Diagnostic accuracy of a combination of salivary hemoglobin levels, self-report questionnaires, and age in periodontitis screening

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Abstract

Purpose

This study evaluated the predictive performance of a combination of self-report questionnaires, salivary hemoglobin levels, and age as a non-invasive screening method for periodontitis.

Methods

The periodontitis status of 202 adults was examined using salivary hemoglobin levels, responses to 10 questions on a self-report questionnaire, and the Community Periodontal Index (CPI). The ability of those two variables and the combination thereof with age to predict the presence of CPI scores of 3-4 and 4 was assessed using logistic regression and receiver operating characteristic (ROC) curve analysis.

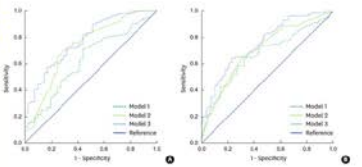
Results

CPI scores of 3-4 and 4 were present among 79.7% and 46.5% of the sample, respectively. The area under the ROC curves (AUROCs) of salivary hemoglobin levels for predicting prevalence of CPI scores of 3-4 and 4 were 0.63 and 0.67, respectively (with sensitivity values of 71% and 68% and specificity values of 56% and 72%, respectively). Two distinct sets of five questions were associated with CPI scores of 3-4 and 4, with AUROCs of 0.73 and 0.71, sensitivity values of 76% and 66%, and specificity values of 63% and 69%. The combined model incorporating both variables and age showed the best predictive performance, with AUROCs of 0.78 and 0.76, sensitivity values of 71% and 65%, and specificity values of 68% and 77% for CPI scores of 3-4 and 4, respectively.

Conclusions

The combination of salivary hemoglobin levels and self-report questionnaires was shown to be a valuable screening method for detecting periodontitis.

Graphical Abstract



Keywords: Community periodontal index; Hemoglobins; Periodontal diseases; Saliva; Self report

INTRODUCTION

Periodontal disease is one of the most significant oral health burdens worldwide, in addition to dental caries [1]. Recently, a systematic review reported that severe periodontitis is the sixth most prevalent disease worldwide, stating that the global age-standardized prevalence of the disease was 11.2% from 1991 to 2010 [2]. This finding indicates that severe periodontitis is constantly reported in multiple countries, despite variations among countries, regions, and population groups. Moreover, as a chronic disease, periodontitis is regarded as a cause of tooth loss, and is related to a diminished quality of life in individuals with this disease [3]. Periodontitis is a significant public health problem that can be managed at a national level by appropriate public health measures. It is particularly important to detect periodontitis early, to consistently screen and track the disease, and to monitor periodontitis-related morbidity.

Traditional clinical methods for measuring and diagnosing the severity and progress of periodontal disease involve measuring the destruction and inflammation of periodontal tissue, as well as the periodontal index [4]. Clinical measurements using a periodontal probe are conventionally used to detect periodontal disease [5]. Typically, periodontal pocket depth and clinical attachment level are used to diagnose periodontitis in population-level surveillance [6, 7]. Periodontal pocket depth is the standard used to

Formats:
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Periodontal Diseases
Periodontal Index
Periodontitis*
Prevalence
ROC Curve
Saliva
Self Report
Sensitivity and Specificity
Substances:
cyclopropapyrroloindole
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Hoi-In Jung http://orcid.org/0000-0002-1978-6926
Ui-Won Jung http://orcid.org/0000-0001-6371-4172
Hee Eun Kim http://orcid.org/0000-0002-8632-9768
Baek-Il Kim http://orcid.org/0000-0001-6234-2327

Funding Information:
National Research Foundation of Korea
http://dx.doi.org/10.13039/501100003725
2013R1A1A2062505

The maximum point that the sum of the sensitivity and specificity values was established as the cutoff point. All statistical analyses were performed using SPSS 20.0 (IBM Corp., Armonk, NY, USA) and STATA 13.0 (Stata Corp., College Station, TX, USA). *P*-values <0.05 were considered to indicate statistical significance.

RESULTS

The general characteristics of the 202 participants are presented in Table 1. A total of 79.7% of the patients were diagnosed with CPI scores of 3–4 (24 to 79 years old, mean age=54.3 years), and 46.5% were diagnosed with a CPI score of 4 (24 to 78 years old, mean age=53.1 years). As the age of the participants increased from 20 years to 50 years, the number of periodontitis patients also increased. Overall, more patients were diagnosed with a CPI score of 4 than with a CPI score of 3. The distribution of scores according to sex was relatively equal. However, there were more CPI 4 patients than CPI 3 patients among males, whereas both categories of periodontitis were similarly represented among females. Of the participants, 25.7% had systemic disease. Hypertension was the most common systemic disease, followed by diabetes.

Table 1
Distributions of study participants by periodontitis category and selected demographic characteristics
Click for larger image Click for full table Download as Excel file

The salivary hemoglobin levels of the participants were grouped by CPI score (Table 2). The distribution of salivary hemoglobin levels significantly varied among the five CPI groups ($P<0.001$). The median salivary hemoglobin levels were lowest in the CPI 0 group, at 0.29 μg/mL (range, 0.11–15.44 μg/mL), and highest in the CPI 4 group, at 1.45 μg/mL (range, 0–156.24 μg/mL). However, the median salivary hemoglobin levels did not uniformly increase as the CPI score increased, because the median score in the CPI 2 group was higher than that of both the CPI 1 and 3 groups. When the CPI groups were divided into two subgroups according to the severity of periodontitis, significant differences were found in the hemoglobin levels between the groups with and without periodontitis as defined by a CPI score of at least 3 ($P=0.011$), and between the groups with and without a CPI score of 4 ($P<0.001$).

Table 2
Distributions of salivary hemoglobin levels by CPI score
Click for larger image Click for full table Download as Excel file

The correlations between the prevalence of each level of periodontitis severity (CPI scores of 3–4 and 4) and each question are shown in Table 3. The questions were completed by all participants. The following five questions showed significant associations with a CPI score of 3–4: Q1 (the presence of gum disease), Q2 (subjective rating of gum/teeth health), Q4 (the presence of a loose tooth not caused by an injury), Q5 (presence of lost bone), and Q7 (dental floss use). A CPI score of 4 was significantly associated with the following questions: Q1, Q2, Q4, Q5, and Q9 (smoking habits) ($P<0.05$). Thus, these two slightly distinct sets of questions were used to predict CPI scores of 3–4 and 4, respectively.

Table 3
Distributions of responses to questions and their correlations with periodontitis
Click for larger image Click for full table Download as Excel file

Table 4 and Figure 1 present the validity of salivary hemoglobin levels (Model 1), self-report questions (Model 2), and a model that combined these two screening variables with age (Model 3) in predicting the presence of CPI scores of 3–4 and 4. Model 3 showed the highest predictive performance for CPI scores of 3–4, with an AUROC of 0.78, a sensitivity of 71.3%, and a specificity of 68.3%. Model 1 showed the lowest predictive performance, with an AUROC of 0.63, a sensitivity similar to that of Model 3, and a specificity of <60% at the cutoff point of 0.37 μg/mL. Model 2, which used Q1, Q2, Q4, Q5, and Q7, had an AUROC of 0.73 and sensitivity and specificity values that were slightly higher than those of Model 1.

Table 4
Receiver operating characteristics (ROC) analysis of the predictive models as screening tests for the prevalence of periodontitis by CPI score
Click for larger image Click for full table Download as Excel file

Figure 1
ROC curves for the prediction of periodontitis prevalence as diagnosed by CPI 3-4 (a) and CPI 4 (b). The curves of Model 1, 2, and 3 were constructed using data obtained from salivary hemoglobin levels, the selected questions, and combination of the above two data sets and age. The curves of Model 3 showed the best performance in identifying both patients who were diagnosed as CPI 3-4 (AUROC of 0.78, a) and CPI 4 (AUROC of 0.76, b). ROC, receiver operating characteristics; CPI, community periodontal index.
Click for larger image Download as PowerPoint slide

The predictive performance of the three models for CPI scores of 4 was essentially equivalent to the results for predicting CPI scores of 3–4, with the same ordering of the models. Model 3 had the highest AUROC (0.76) and specificity (76.9%), as well as the highest classification accuracy (70.6%). Model 2, consisting of Q1, Q2, Q4, Q5, and Q9, had a similar sensitivity to Model 3 (66%), but had a lower specificity than the other two

Notes

CONFLICT OF INTEREST: The authors report no conflicts of interest related to this study.

ACKNOWLEDGEMENTS

This research was supported by the Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2013R1A1A2062505). We are grateful to Dr. Si-Mook Kang of Yonsei University College of Dentistry, Korea, for his technical help in analyzing hemoglobin levels in saliva samples.

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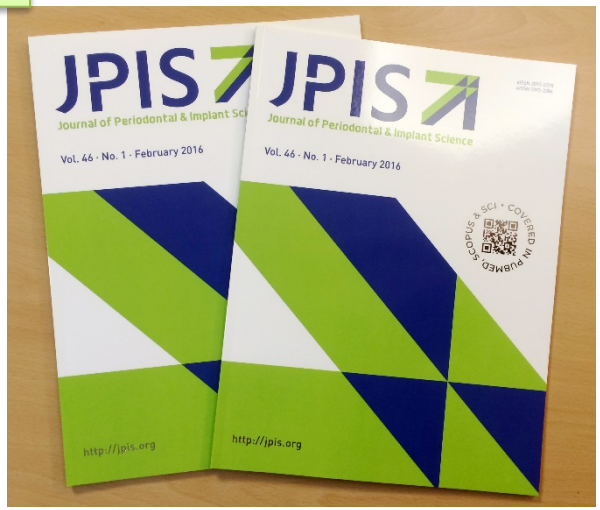
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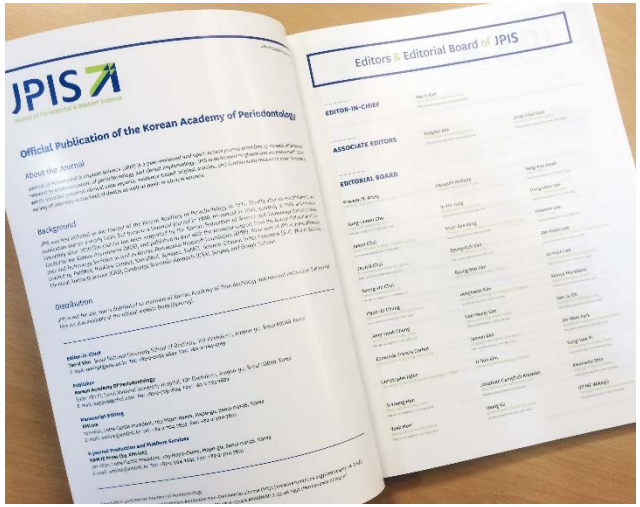
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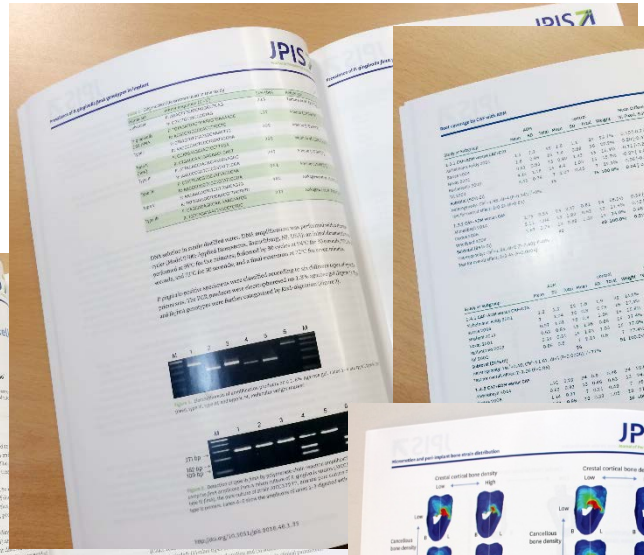
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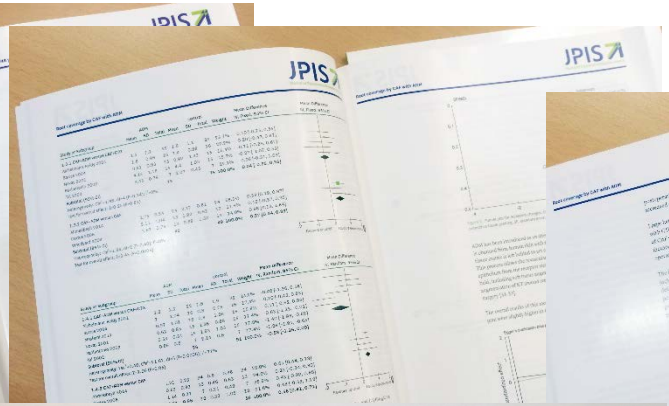
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Root coverage using a coronally advanced flap with or without acellular dermal matrix: a meta-analysis
ABSTRACT
INTRODUCTION


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Crestal cortical bone density
Cancellous bone density
Strain distribution in the bone around the implant


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Impact on survival with adjuvant radiotherapy for clear cell, mucinous, and endometriod ovarian cancer: the SEER experience from 2004 to 2011

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Abstract

Go to:

Objective

Evaluate the impact of radiotherapy on cause specific survival (CSS) and overall survival (OS) for stage (I–III) clear cell, mucinous, and endometriod ovarian cancer.

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Original Article

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Conflict of Interest
No potential conflict of interest relevant to this article was reported.

ABSTRACT

Objective: Evaluate the impact of radiotherapy on cause specific survival (CSS) and overall survival (OS) for stage (I–III) clear cell, mucinous, and endometriod ovarian cancer.
Methods: We analyzed incidence, survival, and treatments from the Surveillance, Epidemiology, and End Results (SEER) Program from 2004 to 2011 for clear cell, mucinous, and endometriod histologies of the ovary for stages (I–III). We examined CSS and OS for all three histologies combined and each histology with relation to the use of adjuvant radiation therapy (RT). Survival analysis was calculated by Kaplan-Meier and log-rank analysis.
Results: CSS was higher in individuals not receiving RT at 5 years (81% vs. 74%) and 10 years (74% vs. 65%, p=0.003). OS was higher in individuals not receiving RT at 5 years (76% vs. 73%) and 10 years (64% vs. 59%, p=0.039). Stage III patients receiving RT had a higher OS at 5 years (54% vs. 44%) and 10 year intervals (36% vs. 30%, p=0.037). Stage III patients with mucinous histology receiving RT had a higher OS at 5 years (50% vs. 36%) and 10 years (45% vs. 26%, p=0.052).
Conclusion: Those receiving RT had a lower CSS and OS at 5 and 10 years. However, subgroup analysis revealed a benefit of RT in terms of OS for all stage III patients and for stage III patients with mucinous histology.

Keywords: Ovary; Radiation; Survival; Uncommon Histology

INTRODUCTION

In the United States, ovarian cancer is the most common cause of gynecologic-related cancer mortality [1]. Specifically, nearly 23,000 women are diagnosed with ovarian cancer yearly, and of these, 14,000 women die every year. A majority of these women are diagnosed with advanced disease, namely, The International Federation of Gynecology and Obstetrics stage III disease [1]. The established standard of care for ovarian cancer has been total abdominal hysterectomy, bilateral salpingo-oophorectomy, omentectomy, washings, and suspicious node removal with adjuvant platinum based chemotherapy, based on extent of primary and nodal involvement, margins, and residual disease [2]. Unfortunately, the 5-year overall survival (OS) for ovarian cancer is about 40%; and the median progression free survival for advanced ovarian cancer is about 18 months [1].

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In conclusion, over 2004 to 2011, only 3% of all clear cell, endometriod, and mucinous ovarian cancer cases were treated with adjuvant RT. Subgroup analysis revealed a benefit of RT in terms of OS for all stage III patients and for stage III patients with mucinous histology. These findings together with previous studies that demonstrated a potential survival benefit of adjuvant RT for stage I and II patients in these histologies suggest a role of RT. Therefore, further investigation should be performed in the indication for RT, dose and volume treated, RT techniques and delivery, treatment compliance, and the patient's functional status for non-metastatic clear cell, mucinous, and endometriod ovarian cancer.

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Table 1. Clinicopathological characteristics of patients who underwent positron emission tomography/computed tomography before operation for cervical cancer (n=85)

Characteristic	No. (%)
Age (yr), median (range)	47 (27-80)
Progression-free survival (mo), median (range)	32 (6-83)
FIGO stage	
IB1	59 (69.4)
IB2	11 (12.9)
IIA	15 (17.6)
Histology	
Squamous cell carcinoma	59 (69.4)
Adenocarcinoma	16 (18.8)
Adenosquamous carcinoma	5 (5.9)
Others	5 (5.9)
Tumor diameter, median (range)	3.2 (0.5-9.5)
Lymph node metastasis	20 (23.5)
Parametrium invasion	15 (17.7)
Recurrence	14 (16.5)

FIGO, International Federation of Gynecology and Obstetrics.

primary tumor size (r=0.455, p<0.001), depth of cervical stromal invasion (r=0.425, p<0.0 and PM invasion (r=0.227, p=0.039). **Supplementary Table 2** depicts Descriptive statistics each MTV by SUV threshold.

3. Cut-off value for tumor heterogeneity

The ROC curves used to analyse the IFH in relation to PFS. IFH at an SUV of 2.0 was used i ROC analysis, and the area under the curve was 0.661, and 0.418 was determined to be the cut-off value.

4. Tumor heterogeneity and recurrence

Table 2 summarizes the prognostic values of all of the parameters investigated in the curre study. Except FIGO stage which was calculated as categorized variable, other parameters we calculated as continuous variables. Cox proportional hazard analysis revealed that recurren was significantly associated with TLG_{tumor} (p<0.001), MTV_{tumor} (p=0.001), SUV_{tumor} (p=0.01 FIGO stage (p=0.015), SUV_{LN} (p=0.004), and IFH (p=0.005). The Kaplan-Meier survival graphs (**Fig. 2**) showed that PFS differed significantly in groups of subjects categorized bas on IFH (p=0.013, log-rank test).

Table 2. Analyses of prognostic factors for progression-free survival in patients with cervical cancer

Variable	Test for PFS	HR	95% CI	p-value
Age (yr)		1.000	0.946-1.057	0.999
FIGO stage	II vs. I	3.746	1.290-10.881	0.015
Tumor size		1.177	0.924-1.500	0.188
LN metastasis	Present vs. absent	1.716	0.536-5.497	0.363
PM invasion	Present vs. absent	1.899	0.594-6.066	0.278
SUV_{tumor}		1.040	1.008-1.072	0.013
MTV_{tumor}		1.020	1.008-1.032	0.001
TLG_{tumor}		1.001	1.001-1.002	<0.001
SUV_{LN}		1.105	1.031-1.184	0.004
IFH		34.586	2.853-419.310	0.005

FIGO, International Federation of Gynecology and Obstetrics; HR, hazard ratio; IFH, intratumoral [^{18}F]fluorodeoxyglucose (FDG) uptake heterogeneity; LN, lymph node; MTV, metabolic tumor value; PFS, progression-free survival; PM, parametrium; SUV, standardized uptake value; TLG, total lesion glycolysis.

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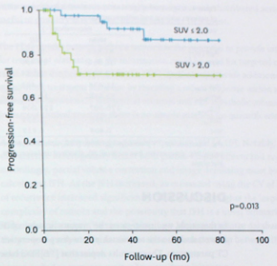

Fig. 2. Kaplan-Meier survival graph shows significantly different progression-free survival between the groups categorized by intratumoral [^{18}F]fluorodeoxyglucose uptake heterogeneity above (blue line) and below (green line) cut-off value (0.418; p=0.013, log-rank test).

5. Prediction of recurrence

Table 3 presents the multivariate regression analysis of the prognostic values of the parameters determined to be significant in univariate analysis. Multivariate analysis identified IFH (HR, 756.997; 95% CI, 2.047 to 279,923.191; p=0.028) was the only independent risk factor for recurrence in the current study.

Table 4 summarizes the clinico-pathological and PET/CT derived characteristics of patients without and with recurrence. There were significant differences of PFS, MTV_{tumor}, TLG_{tumor}, SUV_{LN}, and IFH between patients with and without recurrence. There was significant difference (p=0.047) between the mean IFH values of non-recurrent and recurrent groups (**Fig. 3**).

Table 3. Multivariate analyses of prognostic factors for progression-free survival

Variable	HR	95% CI	p-value
IFH	756.997	2.047-279,923.191	0.028
FIGO stage*	1.817	0.418-7.911	0.426
MTV_{tumor}	0.981	0.946-1.017	0.293
TLG_{tumor}	1.005	0.999-1.011	0.118
SUV_{tumor}	0.832	0.657-1.055	0.129
SUV_{LN}	1.056	0.956-1.165	0.283

FIGO, International Federation of Gynecology and Obstetrics; HR, hazard ratio; IFH, intratumoral [^{18}F]fluorodeoxyglucose (FDG) uptake heterogeneity; LN, lymph node; MTV, metabolic tumor value; PFS, progression-free survival; SUV, standardized uptake value; TLG, total lesion glycolysis.
*Test for PFS: II vs. I.

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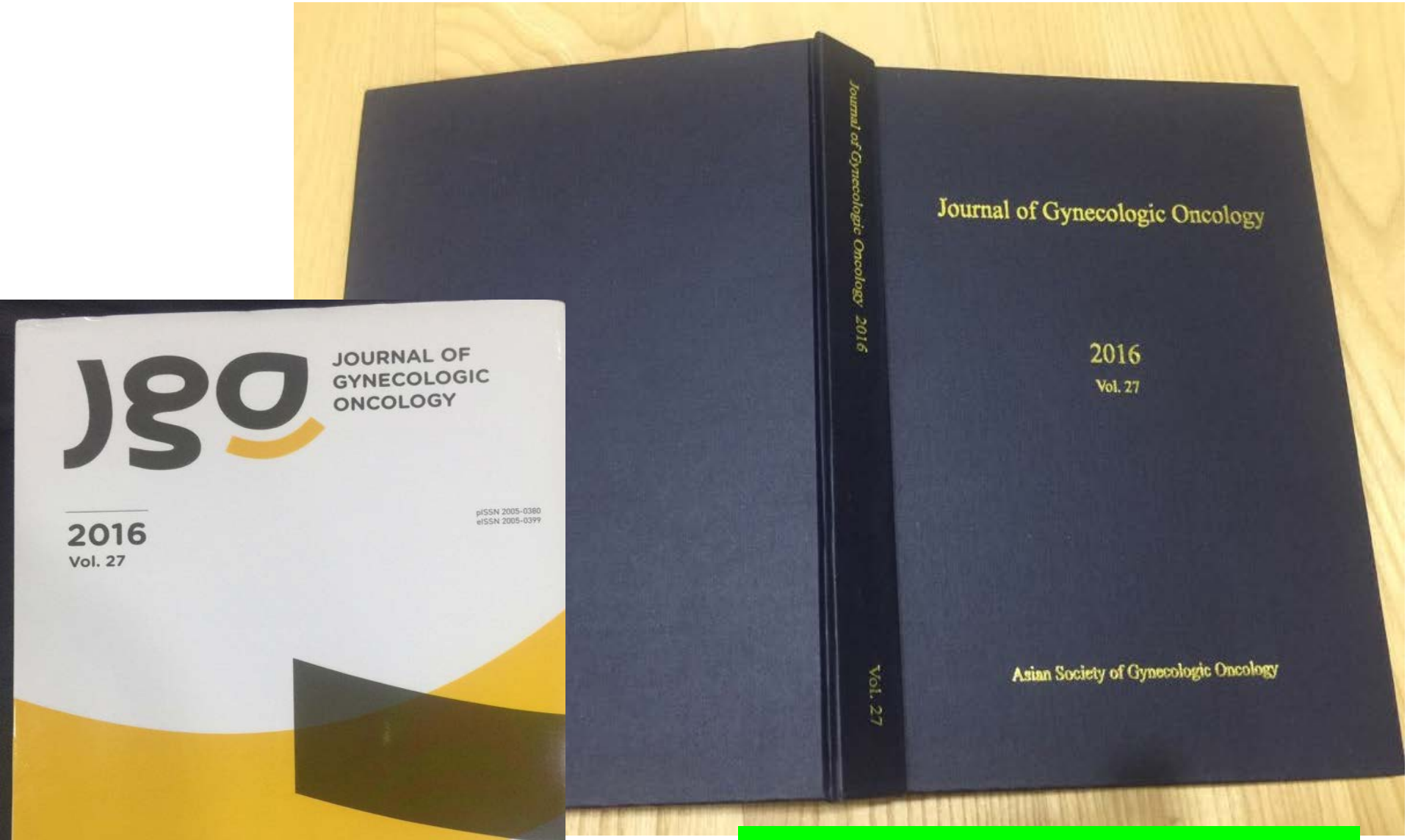

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The Association between Coffee Consumption and Bone Status in Young Adult Males according to Calcium Intake Level

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Abstract

Go to:

The purpose of this study was to investigate the association between coffee consumption and bone status (bone mineral density and bone metabolism-related markers) according to calcium intake level in Korean young adult males. Healthy and nonsmoking males (19-26 years, n = 330) participated in this study. Anthropometric measurements, dietary habits, and nutrient intakes were surveyed. Bone status of the calcaneus was measured by using quantitative ultrasound (QUS). Bone metabolism-related markers

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MeSH Terms:
Alkaline Phosphatase
Body Height
Body Weight
Calcaneus
Calcium*
Coffee*
Collagen Type I
Energy Intake
Food Habits
Humans
Male*
Metabolism
Miners
Multiple Endocrine Neoplasia
Osteocalcin
Ultrasonography
Young Adult*

Substances:
Alkaline Phosphatase
Calcium
Coffee
Collagen Type I
Osteocalcin

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Original Article

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Conflict of Interest
The authors have declared no conflict of interest.

ABSTRACT

The purpose of this study was to investigate the association between coffee consumption and bone status (bone mineral density and bone metabolism-related markers) according to calcium intake level in Korean young adult males. Healthy and nonsmoking males (19-26 years, n = 330) participated in this study. Anthropometric measurements, dietary habits, and nutrient intakes were surveyed. Bone status of the calcaneus was measured by using quantitative ultrasound (QUS). Bone metabolism-related markers including serum total alkaline phosphatase activity (TALP), N-mid osteocalcin (OC), and type I collagen C-terminal telopeptide (1CTP) were analyzed. The subjects were divided into two groups based on daily calcium intake level: a calcium-sufficient group (calcium intake ≥ 75% RI, n = 171) and a calcium-deficient group (calcium intake < 75% RI, n = 159). Each group was then further divided into three subgroups based on daily average coffee consumption: no-coffee, less than one serving of coffee per day, and one or more servings of coffee per day. There were no significant differences in height, body weight, body mass index, energy intake, or calcium intake among the three coffee consumption subgroups. QUS parameters and serum 1CTP, TALP, and OC were not significantly different among either the two calcium-intake groups or the three coffee consumption subgroups. Our results may show that current coffee consumption level in Korean young men is not significantly associated with their bone status and metabolism according to the calcium intake level.

Keywords: Coffee consumption; Calcium intake; Bone status; Young adult males

INTRODUCTION

Osteoporosis has been a global public health problem particularly among postmenopausal women, but its prevalence in males is getting increasing [1-3]. Recently, the prevalence of osteoporosis in Korean men aged over 65 years was reported as 15.2%, which was significantly lower than that in Korean women (57.6%), but osteoporosis is also becoming a major disease in aged men [4].

Bone mass increases primarily during the growth period, and peak bone mass is generally completed in between age 18 and 30. It has been reported that peak bone mass is one of important determinants of osteoporosis [5-7]. Genetic factors are the strongest determinants

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Table 3. Multiple stepwise regression analysis to find major contributors to the increase of fasting blood glucose level during the short period (3 months)

Variables	Standardized β-coefficients	p value	R	p value
Model 1				
ΔApoB	0.315	0.002	0.315	0.002
Model 2				
ΔApoB	0.281	0.005	0.382	0.001
ΔWaist circumference	0.219	0.029		

Dependent variable: changed levels of fasting blood glucose; independent variables: changed levels of body mass index, waist circumference, systolic blood pressure, diastolic blood pressure, triglyceride, total cholesterol, HDL-cholesterol, LDL-cholesterol, non-HDL cholesterol, ApoB, ApoA1 and adiponectin; Δ, changed levels between at baseline and after 3-month.

as major contributors to the net change of glucose levels. In model 1, increased ApoB levels contributed to the increase of fasting glucose levels (standardized b-coefficient: 0.315, p = 0.002;). In model 2, increased levels of ApoB (standardized b-coefficient: 0.281, p = 0.005) and waist circumference (standardized b-coefficient: 0.219, p = 0.029) contributed to the increase of fasting glucose levels, respectively (r = 0.382, p = 0.001).

DISCUSSION

This study suggested that serum ApoB levels may be closely associated with the increased risk of diabetes in Korean men. In our study, subjects with higher ApoB levels (≥ 87.0 mg/dL) showed approximately 2 times higher risk of newly-onset diabetes than those with lower ApoB levels (< 87.0 mg/dL) even after the adjustment for age, BMI, BPs, TG, HDL-C, LDL-C, non-HDL-C, ApoA1 and adiponectin. In addition, multiple stepwise regression analysis revealed that changed ApoB levels were a main contributor to the changed glucose level.

Recent studies have reported that ApoB levels were associated with diabetes [8,12,21,22]; for example, plasma ApoB levels was associated with the incidence of type 2 diabetes, and the risk of diabetes might be better predicted by ApoB levels than by LDL-C or HDL-C. These reports may suggest the potential for the use of ApoB in the assessment for the risk of type 2 diabetes [21,22]. In a large Finnish cohort studies, Salomaa et al. [12] found that ApoB and adiponectin among the screened 31 novel biomarkers, were the best biomarkers for the prediction of the risk of diabetes incidence. On the other hand, Davidson [5] demonstrated that the predictive value of the ApoB/ApoA1 might be stronger and better than the use of either apolipoprotien alone or together. According to Harper and Jacobson [11], the levels of non-HDL- C strongly correlated with the levels of ApoB, and both of non-HDL- C and ApoB rather than LDL-C, may better predict overall cardiovascular risk. Non-HDL-C is calculated by subtracting HDL-cholesterol from total cholesterol, and it reflects circulating levels of the atherogenic ApoB-containing lipoproteins including LDL-C, VLDL, intermediate density lipoprotein cholesterol, chylomicron remnants, and lipoprotein$_{(a)}$ [11,23]. Non-HDL-C has as a major advantage in aspect that it can be calculated by all lipid profiles, and it measures all the ApoB-containing lipoproteins that are considered atherogenic [23].

In our study, serum ApoB levels turned out to be a good predictor for the risk of newly-onset diabetes even after the adjustment. In addition, net change of ApoB levels together with that of waist circumference were found as main influencing factors on the net change of glucose levels. It may be related that an absolute value of ApoB indicates the particle number of LDL as well as represents approximate LDL size thus, the measurement of ApoB levels may better reflect diabetic status, particularly newly-onset diabetes [6,13].

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The present investigation may have several limitations. First, the study design was rather based on cross-sectional observation, not on a case-control design, because study participants (NFG, IFG and newly-onset diabetes) were classified by screening their fasting glucose levels even though some people were in the borderline of criteria had re-examination. Second, the period of follow-up observation (3 months) was so short, and the followed-up sample size was small. Thirds, study subjects were exclusively Korean men, thus the results may not be applicable to women or other ethnic samples whose clinical and biochemical characteristics may differ from those in our population. Thus, it is necessary to investigate the relationship between ApoB levels and the risk of newly-onset diabetes in other ethnic population as well as much larger population including women. In addition, prospective longitudinal observation is needed in order to investigate if ApoB levels can be used as a better prognostic marker for the risk of newly-onset diabetes and diabetic complication.

CONCLUSION

This study shows that ApoB levels are closely associated with the increased risk of newly-onset diabetes in Korean men, which suggests a possibility of serum ApoB levels as an early predictor for the risk of diabetes.

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The Intra- and Inter-rater Reliability and the Learning Curve for a Simple Neurological Score for Rats

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Abstract

Go to:

Objective

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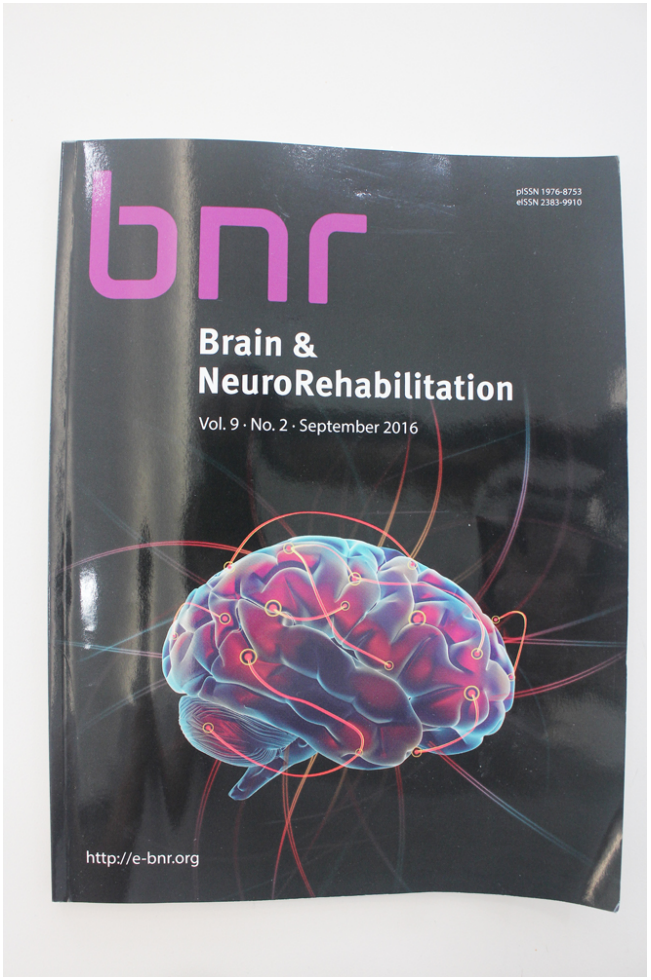
ABSTRACT

Objective: To measure the intra- and inter-rater reliability of a simple sensorimotor performance test for rats, and to evaluate the learning efficiency of a novice rater for the test.
Method: Middle cerebral arteries were occluded by intraluminal sutures in 25 male Sprague-Dawley rats (10-12 weeks old). The sensorimotor performance test was performed by a novice and an experienced rater, with each rater performing the test twice each week for 3 consecutive weeks. A ten-minute standardized video about the rating method was shown to the novice rater after the second test each week.
Results: The intra- and inter-rater agreement was determined using Cohen's weighted kappa coefficient. The intra-rater reliability was initially poor for the novice (κ [95% confidence interval], 0.31[−0.02, 0.64]), but it improved significantly after 3-week self education using the standardized video (0.81 [0.69, 0.93], showing almost perfect agreement. The reliability of the experienced researcher was good at all times (κ=0.64, 0.76, 0.71, for week 1, 2, 3, respectively), indicating substantial agreement. The inter-rater reliability showed clear improvement after self-education (κ= 0.44, 0.69, 0.69, for week 1, 2, 3, respectively). Although the total sum score was highly reliable, some of the individual items showed lower intra- and inter-rater agreement. However, each rater showed greater within-rater variability for different subtests.
Conclusion: The simple sensorimotor performance test showed high degree of intra- and inter-rater agreement when performed by experienced or properly educated raters. The inaccuracy of the novice was rectified by 3-week self-education using a video.

Keywords: Learning curve; Motor activity; Behavioral research; Reproducibility of results

INTRODUCTION

Both practicality and reliability are essential prerequisites of outcome measures in neuroscience research using laboratory animals. Although the volume of infarct tissue or histological changes such as the number of specific cells and optical density of tissue markers have been frequently used, tracking of these changes longitudinally within the same brain is limited. Therefore, neurological functional tests still serve as the valuable adjuncts even in this golden era of molecular biology.



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Conflict of Interest
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Thank you!

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