Objectives: In the context of the current COVID-19 pandemic and the discontinuation of traditional classroom teaching, a tele-didactic US course for undergraduate medical students was developed. This study is examining the educational outcome of a new digital US course of the abdomen, thorax and the thyroid gland with the implementation of a modern portable US system.

Methods: A tele-guided US course was established between April 1st and June 20th, 2020, at the University Hospital in Bonn, Germany. Students completed pre- and post-course surveys and underwent six US organ modules. Each module took place in a flipped-classroom concept including a digital learning platform. An objective structured assessment of US skills (OSAUS) [2] was implemented as final exam. Further, US images of the course and exam were rated by the Brightness Mode Quality Ultrasound Imaging Examination Technique (B-QUIET) [3]. Achieved points in image rating were compared to the OSAUS exam and survey results.

Results: A total of 15 medical students were enrolled. There was a significant increase in self-assessed theoretical and practical ability ($p < 0.001$). Students achieved an average score of 154.5 (SD $\pm$ 11.72) out of 175 points (88.29%) in OSAUS, which corresponded to the image rating using B-QUIET and self-assessment data obtained in surveys. Interrater analysis of US images showed a favorable agreement with an ICC (2,1) of 0.895 (95% confidence interval 0.858 < ICC < 0.924).

Conclusion: US training via teleguidance should be considered in medical education. Our pilot study demonstrates the feasibility of this concept that can be used in the future to improve US training of medical students even during a pandemic. The digital implementation with an affordable, portable point-of-care-US device could be an incredible opportunity to expedite US training worldwide.

REFERENCES:

- [1] Law J, Macbeth PB. Ultrasound: from Earth to space. *McGill J Med* 2011; 13(2): 59 [PMID: 22399873]
- [2] Tolsgaard MG, Todsén T, Sørensen JL, *et al.* International multispecialty consensus on how to evaluate ultrasound competence: a Delphi consensus survey. *PLoS One* 2013; 8(2): e57687 [https://doi.org/10.1371/journal.pone.0057687] [PMID: 23469051]
- [3] Bahner DP, Adkins EJ, Nagel R, Way D, Werman HA, Royall NA. Brightness mode quality ultrasound imaging examination technique (B-QUIET): quantifying quality in ultrasound imaging. *J Ultrasound Med* 2011; 30(12): 1649–55 [https://doi.org/10.7863/jum.2011.30.12.1649] [PMID: 22124000]

Figure 1. Implementation of the digital ultrasound course concept

Classroom setting is displayed, demonstrating simultaneous screen transmission of ultrasound (US) and camera images. A: The peer tutor's camera image is shared with the students while demonstrating the US examination, B: At the same time the tutor's mobile phone screen is shared with the students in order to visualize the US image acquisition, C: Students performing the US examination on their own, D: Example of a worksheet, which had to be completed within the app and was stored along with the US images in the cloud

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.465

AB0847

ESTABLISHMENT AND VALIDATION OF A DIDACTIC MUSCULOSKELETAL ULTRASOUND COURSE FOR DERMATOLOGISTS USING AN INNOVATIVE HANDHELD ULTRASOUND SYSTEM – THE MUDE STUDY (MUSCULOSKELETAL ULTRASOUND IN DERMATOLOGY)

J. Grobelski¹, F. Recker², D. Wilsmann-Theis³, W. Hartung⁴, P. Karakostas¹, P. Brossart¹, V. Schäfer¹. ¹University Hospital Bonn, Clinic of Internal Medicine

³III, Oncology, Haematology, Rheumatology and Clinical Immunology, Bonn, Germany; ²University Hospital Bonn, Centre for Obstetrics and Gynecology, Bonn, Germany; ³University Hospital Bonn, Clinic and Polyclinic for Dermatology and Allergology, Bonn, Germany; ⁴Bad Abbach, Rheumatology and Clinical Immunology, Bad Abbach, Germany

Background: In the early detection of arthritis, such as psoriatic arthritis (PsA), ultrasound (US) of painful joints plays an important role in diagnosis. Pathological findings can be missed during clinical examination, especially if conducted by physicians who are not trained. Furthermore, several publications undermine the importance of early PsA detection in psoriasis patients and the key role of the dermatologists in this process.

Objectives: The objective of this study was to examine a pilot musculoskeletal ultrasound (MSUS) course designed specifically for dermatologists.

Methods: To assess the degree of US expertise of the participants, a questionnaire was conducted before the course. The course concept, based on The German Society for Ultrasound in Medicine (Deutsche Gesellschaft für Ultraschall in der Medizin, DEGUM) covering only the most important US sections of all joints and focused on the detection of joint effusion and hyperperfusion. The course consisted of three modules and was carried out over 6 months. Figure 1 shows the modular course concept. A portable US device in combination with a tablet was provided to enable practice between the courses. The final teaching evaluation was carried out as an objective structured clinical examination (OSCE) consisting of three stations, each representing the three course modules. According to the following grade scoring system, the performance rating was checked: < 60 % failed, ≥ 60 - < 70 % sufficient, ≥ 70 % - < 80 % satisfying, ≥ 80 % - < 90 % good, ≥ 90 % very good.

Figure 1 Ultrasound Course Module Structure

MCP: Metacarpophalangeal joint, PIP: Proximal interphalangeal joint, DIP: Distal interphalangeal joint, OSCE: objective structured clinical examination

Results: Twelve dermatologists participated. The mean age of our cohort was 39 years (SD $\pm$ 9.99 years) with nine females (75 %). Eight were specialists in dermatology in mean for 11.4 years (SD $\pm$ 11 years). Four were assistant physicians practicing dermatology in mean for 3.06 years (SD $\pm$ 0.97 years).

The survey revealed no prior knowledge of MSUS. The overall mean score of all participants in the OSCE was 21.86 (SD $\pm$ 2.12) (87.44%) out of a total of 25 points resulting in a good grade. There was no statistically significant difference between the assistant physicians and the specialists in dermatology regarding the OSCE results. Table 1 shows the OSCE results.

Table 1. Objective structured clinical examination (OSCE) mean results for all three stations

OSCE stations	Mean absolute	Mean absolute	Standard Deviation	Mean percentage	Standard Deviation	Confidence Interval	Grade
1	18.92	18.92	+/- 3.07	75.67%	+/-12.27%	67.87-83.46%	Sufficient
2	23.83	23.83	+/-0.99	95.33%	+/-3.94%	92.83-97.84%	Very good
3	22.83	22.83	+/-0.37	91.33%	+/-1.49%	90.39-92.28%	Very good
OSCE station 1-3	21.86	21.86	+/-2.12	87.44%	+/-8.49%	66.36-108.53%	Good

Conclusion: The innovative US teaching concept was able to demonstrate, that it is appropriate for the training of dermatologists in MSUS, independently of their age, experience in dermatology and US.

Disclosure of Interests: Jakub Grobelski: None declared, Florian Recker: None declared, Dagmar Wilsmann-Theis: None declared, Wolfgang Hartung: None declared, Pantelis Karakostas: None declared, Peter Brossart: None declared, Valentin Schäfer Speakers bureau: AbbVie, Novartis, BMS, Chugai, Celgene, Medac, Sanofi, Lilly, Hexal, Pfizer, Janssen, Roche, Schire, Onkowsen, Royal College London, Consultant of: Novartis, Chugai, AbbVie, Celgene, Sanofi, Lilly, Hexal, Pfizer, Amgen, BMS, Roche, Gilead, Medac, Grant/research support from: Novartis, Hexal, Lilly, Roche, Celgene, Universität Bonn

DOI: 10.1136/annrheumdis-2021-eular.533

AB0848

PARTICIPATION OF UNDERGRADUATE MEDICAL STUDENTS AS INVESTIGATORS IN A RHEUMATOLOGIC COHORT: IMPACT ON DEPRESSION, ANXIETY & STRESS SCALE

S. Basualto¹, J. V. Ziroldo Lopes², A. Rizzo Borges³, M. Abreu⁴, C. Albuquerque⁵, N. Araújo⁶, A. B. Bacchiega⁷, B. Bica⁴, D. Brito⁸, A. Duarte⁹, P. Realte¹⁰, G. Ferreira¹¹, K. Wagner Poti Gomes¹², A. K. Melo¹³, B. Stadler¹⁴, A. Maria Kakehasi¹¹, E. Klumb¹⁵, H. Mariz⁹, C. Marques⁹, L. Mota⁵, G. Munhoz¹⁶, E. Paiva¹⁷, H. Pereira¹, G. Salviato Pileggi¹⁷, M. Pinheiro¹⁸, J. R. Provenza¹⁹, A. P. Gomides⁵, E. Reis Neto¹⁸, S. Ribeiro¹, E. Sato¹⁸, T. Laroça Skare¹⁴, V. De Souza¹⁰, M. L. M. Teodoro²⁰, L. D. D. A. Valadares⁹, V. Valim²¹, D. Calderaro¹¹. ¹Universidade Federal do Amazonas, Medical School, Manaus, Brazil; ²Faculdade de Medicina da Universidade de São Paulo, Medical School, São Paulo, Brazil; ³Centro Universitário de Brasília, Medical School, Brasília, Brazil; ⁴Universidade Federal do Rio de Janeiro, Medical School, Rio de Janeiro, Brazil; ⁵Universidade de Brasília, Medical School, Brasília, Brazil; ⁶Hospital do Servidor Público Estadual de São Paulo, Rheumatology Department, São Paulo, Brazil; ⁷Faculdade de Medicina de Barretos, Medical School, Barretos, Brazil; ⁸Universidade Federal da Paraíba, Medical School, João Pessoa, Brazil; ⁹Universidade Federal de Pernambuco, Medical School, Recife, Brazil; ¹⁰Universidade Federal de Juiz de Fora, Medical School, Juiz de Fora, Brazil; ¹¹Universidade Federal de Minas Gerais, Medical School, Belo Horizonte, Brazil; ¹²Hospital Geral de Fortaleza, Rheumatology Department, Fortaleza, Brazil; ¹³Universidade Federal da Paraíba, Medical School, João Pessoa, Brazil; ¹⁴Hospital Universitário Evangélico Mackenzie, Rheumatology Department, Curitiba, Brazil; ¹⁵Universidade do Estado do Rio de Janeiro, Medical School, Rio de Janeiro, Brazil; ¹⁶Irmãdade da Santa Casa de Misericórdia de São Paulo, Rheumatology Department, São Paulo, Brazil; ¹⁷Universidade Federal do Paraná, Medical School, Curitiba, Brazil; ¹⁸Universidade Federal de São Paulo, Medical School, São Paulo, Brazil; ¹⁹Pontifícia Universidade Católica de Campinas, Medical School, Campinas, Brazil; ²⁰Universidade Federal de Minas Gerais, Psychology School, Belo Horizonte, Brazil; ²¹Universidade Federal do Espírito Santo, Medical School, Vitória, Brazil

Background: Mental health was widely affected during the new coronavirus pandemic. In addition, some measures adopted by most countries in order to contain the virus spread, such as isolation and social distancing, leading to the interruption of routine activities, including partial or complete interruption of face-to-face classes may be associated with increased stress, depression and anxiety among undergraduate medical students (1). From March to September, 2020, the Brazilian Society of Rheumatology carried out the Mario Pinotti II Project (MPII), a prospective, multicenter, observational cohort study designed to monitor the COVID-19 in patients with rheumatic disease on hydroxychloroquine, using periodic telephone calls performed by undergraduate medical students (2).

Objectives: To compare the mental health status of medical students who were participating from the MPII with their colleagues not involved in this project.

Methods: A web-based survey via google forms platform was developed by a panel composed of undergraduate medical students, rheumatologists, medical school professors, and a psychology professor. It included details on demographic and life habits data and domains regarding depression, anxiety and stress, using the DASS-21 (Depression, Anxiety & Stress Scale), Brazilian version. Data collection occurred from July 20th to August 31st, 2020. Statistical analysis was performed using the SPSS version 20.0. Univariate and multivariate linear regression analysis were performed to verify associations with the DASS-21, defined as dependent variable. A p-value < 0.05 was deemed as significant. This study was approved by the Institutional Research Ethics Committee.

Results: A total of 684 undergraduate medical students were included in this study, of whom 228 as MPII volunteers (VG) and 456 as control group (CG). Median age was 23 years (IQ 21-24) and the CG was older than the VG (p<0.03). Most of them were white (68.8%) and women (63%). There were no significant differences regarding comorbidities, ethnicity, smoking status, alcohol intake and physical activity. Older age, male gender, participation of MPII study, absence of a worsening in sleep pattern during the pandemic and a lower number of prior comorbidities were associated with lower DASS21 scores, suggesting a better mental health (Table 1).

Conclusion: Several aspects may be involved with mental health, including increased emotional maturity, gender and sleep pattern. Although with marginal independent association, medical students with participation in the MPII study had better mental health than their student colleagues not engaged with this research. Our data pointed out that voluntary participation in a research project which foresees interaction by telephone contact with rheumatic patients, professors, rheumatologists, and colleagues is associated with better mental health.

REFERENCES:

- [1] Meo SA, Abukhalaf AA, Alomar AA, Sattar K, Klonoff DC. Covid-19 pandemic: Impact of quarantine on medical students' mental wellbeing and learning behaviors. *Pakistan J Med Sci* 2020;36(COVID19-S4):S43-8.
- [2] Gomides A, Ferreira G, Kakehas A, Lacerda M, Marques C, Paiva E et al. Impact of chronic use of antimalarials on SARS-COV-2 infection in patients with immune-mediated rheumatic diseases: protocol design for a multicentric observational cohort in Brazil. *JMIR Research Protocols*, 2020.Preprint

Table 1. Univariate and multivariate analysis of predictors associated to the DASS-21 in undergraduate medical students during the COVID-19 pandemic

Variable	Univariate analysis			Multivariate analysis		
	B	95%CI	p-Value	B	95%CI	p-Value
Age	-0.32	-0.61 to -0.03	0.03	-0.47	-0.81 to -0.13	0.008
Female gender	4.88	3.021 to 6.76	<0.001	-	-	-
Stable love relationship	-2.49	-4.35 to -0.64	0.008	-2.5	-4.4 to -0.59	0.01
Number of previous comorbidities reported	4.69	3.71 to 5.68	<0.001	4.82	3.73 to 5.92	<0.001
MP-II volunteering	-2.81	-4.74 to -0.86	0.005	-	-	-
Worsening in sleep pattern	6.41	4.62 to 8.20	<0.001	5.01	3.07 to 6.96	<0.001

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.1218

AB0849

ONLINE EDUCATION YIELDS SIGNIFICANT GAINS IN RHEUMATOLOGISTS' KNOWLEDGE OF PSORIATIC DISEASE

A. Stan¹, M. Calle¹, P. Schoonheim¹, A. B. Gottlieb². ¹Medscape, LLC, Education, New York, United States of America; ²Icahn School of Medicine, Mount Sinai, New York, United States of America

Background: Physicians face challenges staying up-to-date with the latest research and accessing the ever-growing field of knowledge is time-consuming. Online education can make these clinician's tasks more efficient and less time-consuming.

Objectives: As part of a larger curriculum, we developed an online CME activity titled: "Optimizing Treatment in Patients With Moderate to Severe Psoriasis". The goal of this study was to assess whether this online CME accredited video discussion improves physicians' understanding of the prevalence and impact of the various manifestations of psoriatic disease, and how these might impact the choice of treatment in patients with psoriasis and/or psoriatic arthritis.

Methods: Rheumatologists participated in an online CME activity (<https://www.medscape.org/viewarticle/931595>) consisting of a 30-minute video discussion between 2 experts with synchronized slides. Educational effect was assessed using a 4-question repeated pairs, pre-/post-assessment. A chi-square test determined if a statistically significant improvement (P <.05 significance level) existed in the number of correct responses from the pretest and posttest scores. Cramer's V was used to estimate the level of impact of the education (Modest