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KINGDOM OF SAUDI ARABIA

TU
جامعة الطائف
TAIF UNIVERSITY



Research Booklet



“Bachelor of Dental Medicine & Surgery”

كلية طب الأسنان
Faculty Of Dentistry



Faculty of Dentistry
Taif University

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Message from Dean, Faculty of Dentistry, Taif University



Welcome to the Research booklet to introduce Faculty of Dentistry, Taif University research activities. This booklet helps staff and students at Faculty of Dentistry to gain a huge knowledge regarding submission of research proposals and taking part in a research project using the facilities available at college and University premises.

Dr. Mohammed Khalil Fahmi

Message from Chairman, Research Committee

Welcome to the Research booklet to introduce Faculty of Dentistry, Taif University researchers to the ways in which you can conduct your research. The team at Faculty of Dentistry have written these for researchers to familiarize you to research equipment's and facilities available at college and university premises to carry out the researches.

We welcome any comments you have on how these guidelines could be more helpful. Please email us enquiries: mkfahmi@tudent.edu.sa

Dr. Mohammed Fareed felemban

An overview of research activity at Faculty of Dentistry

Faculty of Dentistry prescribes standards of responsible and ethical conduct expected by all persons involved in the research activity at Taif University. The staff, students and other personnel involved in the research activity:

1. Should demonstrate professionalism, integrity, fairness, equity and intellectual honesty.
2. Should effectively and transparently manage conflicts of interest or potential conflicts of interest.
3. Should ensure complete safety of those associated with research.
4. Should record and publish their research activity in the way that are open to scrutiny and debate.

Purpose of the research policy at Faculty of Dentistry

The main purpose of this research policy is to ensure high accuracy, validity and ethical standards in the collection and reporting of research data. This provide a framework for standard research practice and for the protection of individual research workers, including staff, undergraduate and postgraduate research students, as well as contracted agents, from possible misunderstandings.

Background

The research policy is based on the Guidelines on Research practice by Saudi Food and Drug Authority and Clinical Trail Regulation (SFDA-2009). All the queries regarding the observance of this policy must be directed to Dr. Mohammed Fareed felemban, Chairmen, Research Committee, Faculty of Dentistry, Taif University.

General Principles

1. All the staff and students involved in the research activity should be committed to high standards of professional conduct.
2. Researchers should ensure that their research activity enhances the good name of the Taif University and the profession to which they belong.
3. Researchers should only participate in research activity which conforms to accepted ethical standards and which they are competent to perform. If in doubt, researchers should seek assistance from their colleagues or peers.
4. Researchers and University should ensure complete safety of subjects involved in the research.
5. All the research (clinical trials) should be conducted according to SFDA guidelines.
6. Clinical trails should not be proceeded without registering the trails in clinical trial registry, SFDA.
7. Confidentiality of the data should be ensured.
8. Debate and criticism of the research work should be essential part of research process.

RECORD KEEPING

1. Research Data (including electronic data) must be recorded in a durable and appropriately referenced form and comply with relevant privacy protocols of SFDA.

2. Individual researchers are able to hold copies of their research data for their own use.
However, retention solely by the individual researcher provides little protection to the researcher or the University in the event of an allegation of falsification of data.
3. If the data is secondary, the location of the original data must be identified, or key information regarding the database from which it was collected must be retained by the researcher or research committee.
4. Research data related to publications must be available for discussion with other researchers.
5. Confidentiality of the data must be ensured and researchers are responsible for ensuring appropriate security of any confidential material, including that held in electronic media.

Supervision of student's research activity

1. Students should be assigned to specific researchers with appropriate skills, qualifications and resources and the ratio of students to supervisors should be kept minimal to ensure effective intellectual interaction and effective oversight of the research at all times.
2. Each research student must be provided with written material on applicable SFDA guidelines for the conduct of research, including those covering ethical requirements for studies on humans and animals, hazardous materials including biohazards, requirements for confidentiality, and occupational health and safety matters.
3. Supervisors must provide guidance and mentorship in all matters of responsible research practice. This includes discussing with the student, at the outset, relevant issues of research conduct and ethics, and intellectual property, and referring any problems/queries to the Research Committee.

Publication and dissemination of research findings

1. Every researcher should submit their research paper for peer reviewing of the for validation of the research activity.
2. publication of multiple papers based on the same set(s) or subset(s) of data is not acceptable, except where there is full cross-referencing within the papers.
3. Publications must include information on the sources of financial support for the research

Authorship

1. Authorship must be based on substantial contributions in a combination of: Conception and design of the project, analysis and interpretation of research data, drafting significant parts of the work or critically revising it so as to contribute to the interpretation.
2. A person who qualifies as an author must not be included or excluded as an author without their permission. This should be in writing, and include a brief description of their contribution to the work.
3. The authors must ensure that others who have contributed to the work are recognized in the research output. Courtesy demands that individuals and organizations providing facilities must also be acknowledged.

Collaborative research across institutions

Where the University is involved in a joint research project, including overseas, an agreement must be reached in writing with the collaborating organizations detailing issues to do with intellectual property, confidentiality and copyright, sharing commercial returns, responsibility for ethics and safety clearances, and reporting to appropriate agencies.

The collaborating parties must identify a person to be involved in the management of research data, primary materials and other items to be retained at the end of the project.

Plagiarism in Research Publication

Faculty of Dentistry follows the University, Deanship of scientific research guidelines regarding plagiarism issues. All faculty who are about to submit their scholarly publications for promotion/research fund grant should go through an evaluation process inside College. A Scientific Committee, headed by the dean of the college, assesses and generates a report about the scholarly publications of faculty members using *iThenticate program* to indicate that all their works are free from plagiarism. If plagiarism is detected, a report will be sent to the University president for action.

Submission of proposal to research group projects at University

Once ratified by the University's President, the Deanship of Scientific Research, Taif University announces the University's annual research priorities by officially sending them to all academic colleges and departments. The Deanship of Scientific Research later sends a letter to all academic colleges to disseminate among its academic staff the call for research group proposals, which clearly points out the importance of adhering to the University's annual research priorities. In addition, an email is sent to all faculty members at the University to inform them about the University's annual research priorities, and the inception of the annual funding program from research groups. All the submitted proposals are reviewed by Deanship of Scientific Research to ensure they are consistent with the announced university's annual research priorities. Only those proposals that address the university's annual research priorities are then sent to external independent reviewers for further evaluation. Upon the approval of the research group proposal, the main researcher sign a funding contract with the University, whereby she or he agrees to publish the research output in scholarly journals.

GUIDELINES FOR SUBMISSION OF APPLICATION TO RESEARCH COMMITTEE

The researcher should submit an application in a prescribed format along with the study protocol. The protocol should include the following: -

1. The title with signature of Principal Investigator (PI) and Co investigators as attestation for conducting the study.
2. Clear research objectives and rationale for undertaking the investigation in human participants in the light of existing knowledge.
3. Recent curriculum vitae of the Investigators indicating qualification and experience.
4. Participant recruitment procedures and brochures, if any.
5. Inclusion and exclusion criteria for entry of participants.
6. Precise description of methodology of the proposed research, including sample size (with justification), type of study design (observational, experimental, pilot, randomized, blinded etc.), intended intervention, dosages of drugs, route of administration, duration of treatment and details of invasive procedures if any.
7. Plan to withdraw or withhold standard therapies in the course of research.
8. Plan for statistical analysis of the study.
9. Procedure for seeking and obtaining informed consent with sample of patient information sheet and informed consent forms in English and Arabic languages.
10. Safety of proposed intervention and any drug or vaccine to be tested, including results of relevant laboratory, animal and human research.
11. For research involving more than minimal risk, an account of management of such risk or injury.

12. Proposed compensation and reimbursement of incidental expenses and management of research related and unrelated injury/ illness during and after research period.
13. An account of storage and maintenance of all data collected during the trial.
14. Plans for publication of results - positive or negative - while maintaining the privacy and confidentiality of the study participants.
15. A statement on probable ethical issues and steps taken to tackle the same like justification for washout of standard drug, or the use of placebo control.
16. All other relevant documents related to the study protocol like investigator's brochure for trial on drugs/ devices/ vaccines/ herbal remedies and statement of relevant regulatory clearances. Saudi Clinical Trial Registry (SCTR) number for conducting any clinical trials.
17. Agreement to comply with national and international Good Clinical Practices (GCP) protocols for clinical trials.
18. Details of Funding agency/ Sponsors and fund allocation.
19. For international collaborative study details about foreign collaborators and documents for review of National Ethical Committee(NEC) or appropriate Committees under other agencies/ authority like Saudi Food and Drug Authority (SFDA).
20. For exchange of biological material in international collaborative study a Material Transfer Agreement between the collaborating partners.
21. A statement on conflict-of-interest (COI) or potential COI, if any.

CHECK LIST FOR APPLICATION OF RESEARCH PROPOSAL

Proposal Title:

Tick appropriately

Sponsor Information:

1. Saudi Arabia a) Government b. Institutional c. Private

2. International a) Government Private UN agencies

3. Industry National Multinational

Contact Address of Sponsor:

1.Type of Study: Clinical Epidemiological Behavioral

Others if any specify:

Whether: Multicentric Single center

2. Status of Review: New Revised

3. Clinical Trials: Drug / Device/Herbal Remedies:

i. Does the study involve use of:

a. Drug b. Devices c. Herbal products d. NA

ii. Is it approved and marketed

Saudi Arabia UK & Europe USA

Others if any specify:

iii. Does it involve a change in use, dosage, route of administration?

Yes

No

If yes, whether SFDA /Any other Regulatory authority's permission is obtained?

Yes

No

If yes, Date of permission :

iv. Is it an Investigational New Drug?

Yes

No

If yes,IND No:

a). Investigator's Brochure submitted

Yes

No

b). In vitro studies data

Yes

Yes

c). Preclinical Studies done

Yes

No

d). Clinical Study is: Phase I Phase II Phase III Phase IV

e). Are you aware if this study/similar study is being done elsewhere ? If Yes, attach details	Yes	NO
v. Is the trail is registered in SCTR. If yes SCTR number	Yes	No
4. Brief description of the proposal – Introduction, review of literature, aim(s) & objectives, justification for study, methodology describing the potential risks & benefits, outcome measures, statistical analysis and whether it is of national significance with rationale (Attach sheet with maximum 500 words):		
5. Subject selection:		
i. Number of Subjects :		
ii. Duration of study :		
iii. Will subjects from both sexes be recruited	Yes	No
iv. Inclusion / exclusion criteria given	Yes	No
v. Type of subjects Volunteers <input type="checkbox"/> Patients <input type="checkbox"/>		
vi. Vulnerable subjects Yes <input type="checkbox"/> No <input type="checkbox"/>		
(Tick the appropriate boxes)		
Pregnant women <input type="checkbox"/>	Children <input type="checkbox"/>	Elderly <input type="checkbox"/>
		<input type="checkbox"/>

Fetus	<input type="checkbox"/>	Illiterate	<input type="checkbox"/>	Handicapped	
Terminally ill	<input type="checkbox"/>	Seriously ill	<input type="checkbox"/>	Mentally challenged	<input type="checkbox"/>
Economically and socially backward	<input type="checkbox"/>			Any other	<input type="checkbox"/>
vii. Special group subjects					
	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	
(Tick the appropriate boxes)					
Captives	<input type="checkbox"/>	Institutionalized	<input type="checkbox"/>	Employees	<input type="checkbox"/>
Students	<input type="checkbox"/>	Nurses/Dependent staff	<input type="checkbox"/>		
Armed forces	<input type="checkbox"/>	Any other	<input type="checkbox"/>		
6. Privacy and confidentiality:					
i. Study involves	Direct Identifiers	<input type="checkbox"/>	Indirect Identifiers/coded	<input type="checkbox"/>	
Completely anonymized/delinked		<input type="checkbox"/>			
ii. Confidential handling of data by staff			Yes	No	
7. Use of biological/ hazardous materials			Yes	No	
i. Use of organs or body fluids			Yes	No	
ii. Use of recombinant/gene therapy			Yes	No	
If yes, has Department of Biotechnology (DBT) approval for DNA products been obtained?					
iii. Use of pre-existing/stored/left over samples			Yes	No	

iv. Collection for banking/future research	Yes	No
v. Use of ionizing radiation/radioisotopes	Yes	No
vi. Use of Infectious/bio hazardous specimens	Yes	No
vii. Proper disposal of material	Yes	No
<p>viii. Will any sample collected from the patients be sent abroad?</p> <p>If Yes, justify with details of collaborators</p> <p>a) Is the proposal being submitted for clearance from National ethical Committee (NEC) for International collaboration?</p>	Yes	No
<p>b) Sample will be sent abroad because (Tick appropriate box):</p> <p>Facility not available in Saudi Arabia <input type="checkbox"/></p> <p>Facility in Saudi Arabia inaccessible <input type="checkbox"/></p> <p>Facility available but not being accessed <input type="checkbox"/></p> <p>If so, reasons...</p>		
<p style="text-align: right;"><input type="checkbox"/></p>		

9. Will any advertising be done for recruitment of Subjects?(posters, flyers, brochure, websites – if so kindly attach a copy)

10. Risks & Benefits:

Yes

No

i. Is the risk reasonable compared to the anticipated benefits to subjects / community / country?

ii. Is there physical / social / psychological risk / discomfort?

If Yes, Minimal or no risk

More than minimum risk

High risk

iii. Is there a benefit

a) To the subject

Direct

Indirect

b) Benefit to society

11. Data Monitoring

i. Is there a data & safety monitoring committee

Yes

No

iii. Is there a plan for interim analysis of data?

Yes

No

iv. Are there plans for storage and maintenance of all trial database?

Yes

No

If Yes, for how long ?

12. Is there compensation for participation?

Yes

No

<p>If Yes, Monetary <input type="checkbox"/> In kind <input type="checkbox"/></p> <p>Specify amount and type:</p>		
<p>13. Is there compensation for injury?</p> <p>If Yes, by Sponsor <input type="checkbox"/> by Investigator <input type="checkbox"/></p> <p>by insurance company <input type="checkbox"/> by any other <input type="checkbox"/></p>	Yes	No
<p>14. Do you have conflict of interest?(financial/nonfinancial)</p> <p>If Yes, specify:</p>	Yes	No
<p>Checklist for attached documents:</p> <p>Project proposal – 12 Copies <input type="checkbox"/></p> <p>Curriculum Vitae of Investigators <input type="checkbox"/></p> <p>Brief description of proposal <input type="checkbox"/></p> <p>Patient information sheet <input type="checkbox"/></p> <p>Informed Consent form <input type="checkbox"/></p> <p>Investigator’s brochure for recruiting subjects <input type="checkbox"/></p> <p>Copy of advertisements/Information brochures <input type="checkbox"/></p> <p>Copy of clinical trial protocol and/or questionnaire <input type="checkbox"/></p>		

	Name, Designation & Qualifications	Address Telephone number Email ID	Signature
Principal Investigator(PI)			
Co-investigator (if any)			
Chairman			

Getting ethical clearance for research proposal

All the research conducted at college are submitted to ethical clearance at Ethical committee, Deanship of Research, Taif University. The University has a permanent committee for scientific research ethics, which is responsible for monitoring the commitment of researchers to the disciplines and ethics of scientific research. The committee has its procedural manual, which also includes its goals and regulations. The goals of the committee include ensuring the commitment of researchers to the ethics of scientific research and protecting the intellectual properties of researchers and institutions. Researchers, in particular those whose research involves humans or animals, need to obtain an ethical approval from the committee before starting their research. The decision is made according to the policy of Taif University Animal Research Facility. Researchers need to submit an application, along with a form designed for this purpose, detailing all the methodological procedures they intend to follow. The committee reviews the application to ensure the adherence of the researcher to the University's ethical regulations. The committee's decision is then sent the University's President for ratification. The committee has the right to stop the researcher from continuing her or his research project at any stage, if, for example, the potential risks of the research outweigh its benefits, or if the privacy of the research participants are undermined.

Taif University

جامعة الطائف

Faculty of Dentistry



RESEARCH PROPOSAL FORM

Principal Investigator (PI):	
Phone/ Mobile:	
E-mail address: University number (if a student):	
Co- Investigator(s):	

Phone/ Mobile(s):	
E-mail address(s):	
University number(s) (if a student):	
Supervisor(s):	
Department(s):	
Phone/ Mobile(s):	
E-mail address(s):	

Title of the study:

عنوان الدراسة:

Study background (introduction):

Aims of the study:

Subjects and methods:

Study design:

Study duration:

Study settings:

<p>Sampling and population (including inclusion and exclusion criteria):</p>	
<p>Tools and data collection procedure:</p>	
<p>Statistical design:</p>	

<p>Administrative consideration:</p>	<p>1- Research proposal and a request letter are submitted for vice dean female section and vice dean scientific research for approval before conduction of the study.</p> <p>2- A recommendation letter directed to will be issued to allow the research team to conduct the study.</p>
<p>Expected outcomes of the study:</p>	

References:

Overview of Equipment's available at Faculty of Dentistry, Taif University to conduct the research activity

Universal Testing Machine



Application:

Are designed for materials testing applications where specimens are difficult to hold in conventional screw- action grips. Perform tensile, compression, bend, peel, tear, and other mechanical tests on materials and products.

Description:

Pneumatic action grips allow rapid, easy loading of specimens from delicate films to polymers and woven fabrics. These systems are available in a range of sizes and maximum force capacities. From small, low-force systems to test microelectronics, biomaterials, and films in the biomedical and electronics industries to large, high-force systems to test metals and composites in the automotive and aerospace industries. Grips can support loads up to 500N but some specimens may slip at loads over 250N.

Both jaw faces automatically adjust to different specimen thicknesses to ensure that the line of tensile force remains concentric with the grip body. The grips can be equipped with a variety of interchangeable jaw faces for your specific model. These pneumatic action grips clamp the specimen through a dual lever arm, actuated by air cylinders built into the grip body. The gripping force can be increased with air pressure to accommodate materials that are often difficult to hold. This constant gripping force is maintained on the specimen, and provides follow-up action to compensate for any decay in the gripping force. The grips have an integral toggle air valve to open and close the grips. You can also operate the grips using a separate pneumatic foot switch.

Testing Machine



Application:

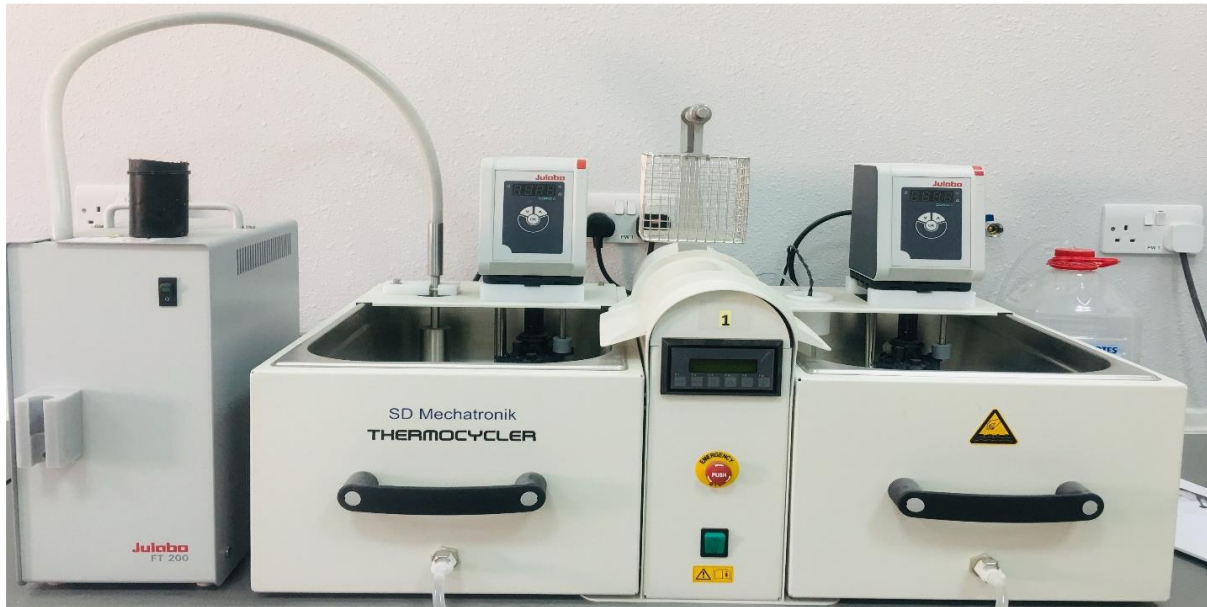
The model 5ST is designed for tension compression, flexure and shear strength testing on materials and assemblies. The robust design that incorporates quality materials and components ensure that our reputation for superior system performance, ease of use and longevity is maintained.

Description:

A servo motor with planetary gear transmits a rotation to two backlash-free biased spindles. The spindles move the sample holder in horizontal direction up to 50 mm while the opposed sample holder remains in its position. The path measurement takes place directly at the sample holder. Therefore, the result is independent from the compliance of the force sensor.

A highly precise force and excursion measuring system as well as the very stable construction and the use of high grade components allow exact reproducibility and high durability. As an option we can provide a force sensor traceable to national standards. The included software allows easy control of the machine. Due to the wide scope of analysis possibilities, many different charges can be simulated and graphically displayed. Different jaw chucks and holders are available.

Thermocycling



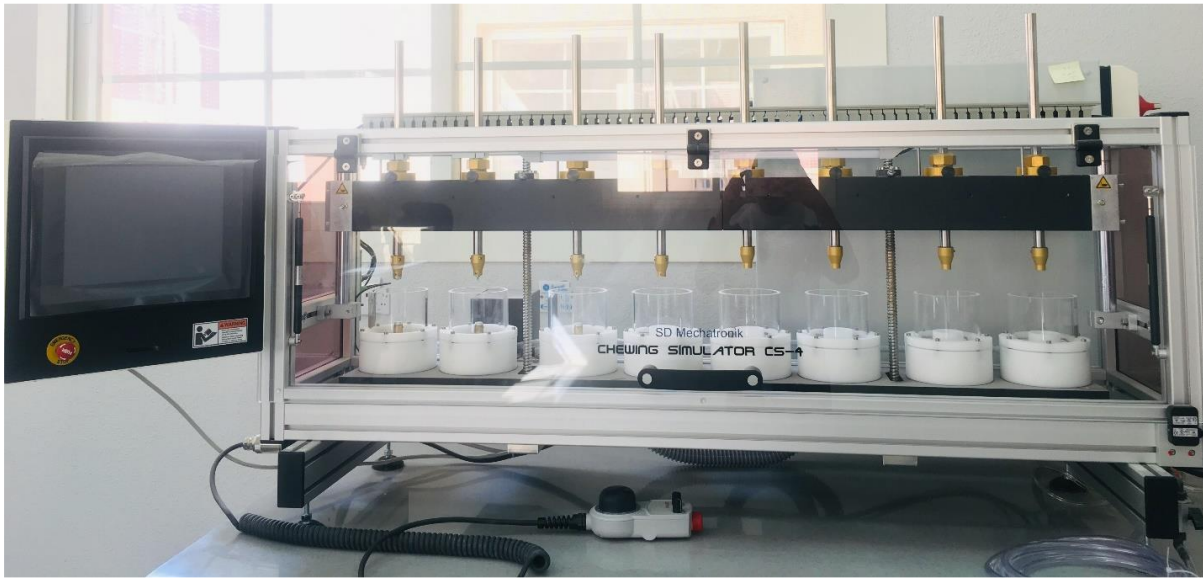
Application:

Is designed for execution of long term temperature-stress testing of dental materials. The thermocycling with its cold and warm bath tank is used for simulation of thermal load cycles of composites.

Description:

Samples are placed in a basket of the TC and then, with a specific retention period, immersed in the two tempered baths. The following parameters can be set by the user: Resting time in warm and cold bath tank, drip off time, number of cycles, auto refill of the warm bath tank and auto start function the entered parameters as well as the actual process status are displayed.

Chewing Simulator



Sample chambers can be filled with water, the height of the antagonist rods can be adjusted with fine threaded screw

Application:

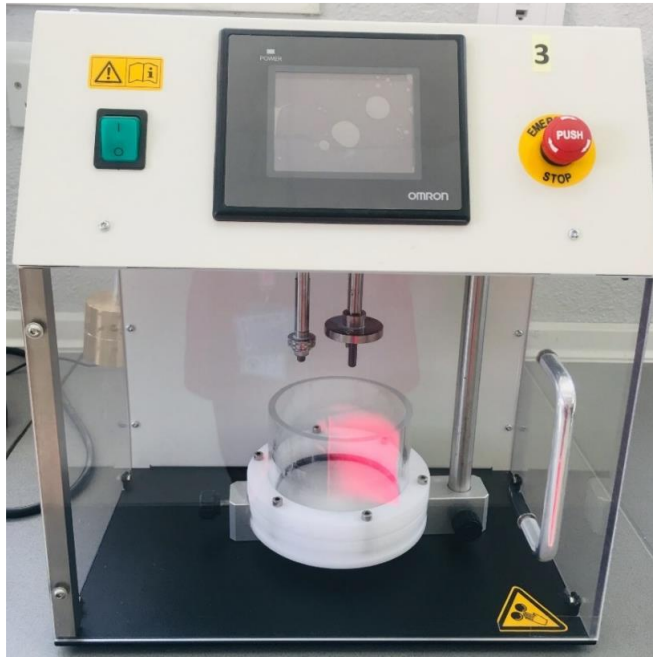
Multifunctional chewing simulators used to simulate different chewing processes in the mouth and thereby evaluate the durability of composites materials. Due to programmable motion patterns of two axels and individual weight adjustment, any movement can be simulated.

Description:

For a chewing simulation, the samples must be inserted to special sample chambers on the horizontal traverse. Then holders for the desired antagonists must be applied to the vertical traverse. Likewise, the desired weights must be applied to the vertical traverse. After setting the required parameters for vertical and horizontal movement and the number of strokes, the process can be started. The powerful engines allow fast movements even with high load. Due to the technical design of the chewing simulator, all samples and all antagonists follow identical motion patterns and kinematics. Data thus obtained is perfectly reproducible. Thanks to the free weight bearing, only the exact weight force is applied to the samples at the

moment of impact loss-free and clearly defined. The impact speed can be set individually to initiate a momentum that ends in a constant weight force.

Three Media Abrasion Machine (Tma)



Application:

The device TMA is used for dental material research for the development and evaluation of composite materials. Abrasion tests are carried out with the three-media abrasion machine for this purpose, a test wheel must be made with the planned composite materials that will then be subjected to an abrasion process according to predefined procedure.

Description:

Up to 12 test materials are inserted into a multi chambered sample wheel. The machine provides a function for cylindrical grinding of the sample wheel. A textured and hardened counter-wheel runs in contact with the sample wheel, and abrasion is effected by the counter-wheel's smaller size, the different in speed between the two wheels as well as the applied medium. Different parameters like grinding pressure, distance of the wheels, rotation speed and direction can be easily and precisely being set. Thus, exact wear tests with different composites can be carried out.

Three Media Abrasion Measuring System (TMAM)



Application:

The three medium abrasion measuring system TMAM was developed to automatically analyze and evaluate the result of the Three-Medium-Abrasion Tests. Material samples are fixed into a special bracket and scanner by a laser distance sensor. The results are shown on the computer screen and can be saved and edited for the future use.

Description:

The abraded sample wheel gets inserted into the TMAM. The analysis gets started via the included PC. After the analysis the results can be examined on the PC. The pre-installed software creates MS-Excel compatible files in .txt format. There in the coordinates of the surface of the sample wheel is displayed. Comfortable software supports the user with scientific analysis of the 12 sample chambers. Special Excel macros feature automatic scientific analysis of 12 specimens per sample wheel. Abrasion volumes of all samples are listed in a 3-D ranking diagram for quick comparison.

Isomet 5000 Linear Precision Saw



Application:

The IsoMet 5000 Linear Precision Saw is an automatic linear saw designed for cutting various material types (metals, ceramics, polymers, etc.) with minimal deformation.

Description:

The IsoMet 5000 Linear Precision Saw contains a 2um specimen positioning system that allows for precise positioning and sectioning of specimens using a diamond wafering blade with a coolant for lubrication of the blades. Consistent cuts are vital to sample analysis. The IsoMet High speed allows features to be locked on the machine to ensure the same parameters are used every time. Program the automatic dressing system to maintain consistent cut quality and extend diamond blade life. Reduce the frequency of changing the dressing stick with the new optimized dressing wheel design.

Grinder- polisher with victor power head



Application:

Provides simple operation for routine grinding and polishing. The comfortable splash guard design allows for excellent control during manual grinding. Semi-automatic units are controlled with a touchscreen interface. All regularly used functions are accessed on the front screen with no complicated menus that can add time to the process. Has a swing out head and easy load specimen holders to save time when accessing samples between preparation steps.

Description:

The MetaServ 250 grinder polisher has a base that can be combined with one of two power heads. The molded protective housing provides long lasting corrosion and impact resistance. Each bowl includes a removable splash guard that reduces overspray and allows easy to the platen. A built-in drain and bowl wash flush out particles and minimize build-up grinding-polishing debris. The adjustable water flow nozzle can be positioned anywhere over the platen, providing cooling precisely where needed.

Spectrophotometer



Application:

Spectrophotometer involves the use of a spectrophotometer. A spectrophotometer is a photometer (a device for measuring light intensity) that can measure intensity as a function of the color, or more specifically the wavelength of light. There are many kinds of spectrophotometers. Among the most important distinctions used to classify them are the wavelengths they work with, the measurement techniques they use, how they acquire a spectrum, and the sources of intensity variation they are designed to measure. Other important features of spectrophotometers include

1. the spectral bandwidth and linear range.
2. Optical properties of materials
3. Estimating dissolved organic carbon concentration
4. Specific Ultraviolet Absorption for metric of aromaticity

Description:

In chemistry, spectrophotometry is the quantitative measurement of the reflection or transmission properties of a material as a function of wavelength. It is more specific than the general term electromagnetic spectroscopy in that spectrophotometry deals with visible light, near-ultraviolet, and near-infrared, but does not cover time-resolved spectroscopic techniques. Spectrophotometry uses photometers that can measure a light beam's intensity as a function of its color (wavelength) known as spectrophotometers. Important

features of spectrophotometers are spectral bandwidth (the range of colors it can transmit through the test sample), the percentage of sample-transmission, the logarithmic range of sample absorption, and sometimes a percentage of reflectance measurement. A spectrophotometer is commonly used for the measurement of transmittance or reflectance of solutions, transparent or opaque solids, such as polished glass, or gases. However, they can also be designed to measure the diffusivity on any of the listed light ranges that usually cover around 200 nm-250 nm using different controls and calibrations. Within these ranges of light, calibrations are needed on the machine using standards that vary in type depending on the wavelength of the photometric determination. The Color-Eye 7000A is a premium spectrophotometer known for its superior inter-instrument agreement and reliability. The ultimate reference tool, with smart technology prevents color measurement when the instrument is uncalibrated or out of performance range. The auto-configuration and self-diagnostics simplify setup and eliminate measurement errors of optically brightened samples.

Castable vacuum system



Application:

Large chamber for multiple samples. Unique tilting dispensing mechanism. Built-in synchronous motor and rotating turn table. The Cast N' Vac removes trapped air from samples. Without the presence of air, the mounting compound fills the sample pores and eliminates gaps between the sample and the compound.

Description:

The Cast N' Vac Castable Vacuum System is a self-contained vacuum impregnation system for use with castable epoxy based resins. It is an automated bench top profiler with Tip/ Tilt head function for easy access of the areas needed to be analyzed. The combination of this feature with automated staging makes the contour GT-I ideally suited to measure on demand. In addition, the contour GT-I utilizes proprietary vibration resistant measurement techniques and a unique base design with integrated air isolation to deliver accurate measurements under very demanding production conditions. The time-tested, vibration tolerant design is fully optimized to provide uncompromised, repeatable and quantitative results.

Hardness testing instrument FH-5



Application:

The FH- 5 series of micro/ macro Vickers knoop and brinell hardness tester combines a practical design with universal specifications. State of the art closed loop, load cell technology and a patent pending force feedback system, assure fast test results at the highest possible accuracy. The designed team has used recently developed sensor technology to create a new industry standard for Vickers hardness testing, eliminating weights and complex mechanical control systems.

Description:

The closed loop system applies force, calculates, filters and controls digital data in a 32-bits embedded CPU system. The tester has a 4 position turret which can be customized by using different indentors, objectives, or stages videos systems, meeting your particular request and your budget. During the assembly process the FH- 5 series will be configured to your particular technical requirements or even painted in your company style.

Analytical balance kern



Application:

The simple recipe weighing and documents is provided with a combined tare print function.

It is intended to be used as a “non-automatic” balance.

Description:

The material to be weighed is manually and carefully placed in the centre of the weighing plate. As soon as a stable weighing value is reached the weighing value can be read. The kern

abs and abj analytical balance are an entry level balance with a high- quality single cell weighing system both models have a unique dosage aid which has a high-stability mode and other filter settings.

Microscope BA210E



Application:

The BA210E is designed for both educational and teaching environments from basic life sciences to medical application. Through the motic infinity optics CCIS, The BA210E delivers a new higher level of performance in education and training.

Description:

In this optical concept the light beams are parallel after leaving the objective in the direction of the eyepieces. A second optical element, the tube lens (normally located in the eyepiece tube) is used converge the parallel beams, resulting in an intermediate image. The

intermediate images is focused by the eyepieces, to provide the real image for visual observation.

The implementation of a tube lens gives the opportunity to minimize chromatic aberrations and other “optical defects”. Further, in “infinity optics” the distance between the objective and tube lens is not as strictly fixed as in the (historically order) “finite optics” of 160mm tube length. This allow additional optical components to be inserted between the objective and tube head. Fluorescence attachments, discussion bridges, eye level risers and other options can be added without affecting the image quality. In general “infinity optics” provides flexibility and the opportunity to add additional optional features.

Water Purification System



Application:

The water purification systems are laboratory systems and are to be used for treatment of water. Laboratories in the central area of clinics and hospital. Laboratories for cell biological and biotechnological work with the safety levels L1, L2 and L3.

Description:

Water purification progresses through independent cartridges with Aquastop quick connects for fast replacement. Dispensing is easy and features variable speed to control flow. To allow

working with a gradient pump system in afore mentioned areas if the gradient pump is connected on the water purification system The systems allows the purification of water on the water categories mentioned in the standards of ASTM 11.1 and ASTM 11.2.

Hydraulic Presser



Application:

Precision laboratory press used to apply compensating force on ivoclar flasks for injection.

Description:

It has working pressure that can be adjusted up to 6 tonnes-for the appropriate pressing of 1-3 or 2-4 flasks. Lock work head in position with upper hand wheel. Insert 4 table pins. Close release valve, leave a gap of $\frac{1}{2}$ between bumper and reservoir. Keep portion of screw extending beyond the ram as short as possible.

Incubator Machine



Application:

Heratherm incubators are laboratory devices for preparing and cultivating cell and tissue cultures. The devices employ precision temperature control for simulating the specific physiological ambient conditions for these cultures. Heratherm ovens for heating applications, equipped with precision temperature control for the work space.

Description:

They are designed for heat treating samples or materials at operating temperatures between 50°C (122 °F) and 250°C (482 °F), including for example, drying, ageing, analyzing, decomposing, burn-in, oxidizing, reducing and preheating

Water BATH



Application:

Water bath widely used for evaporating, drying, concentrating and constant temperature heating in the school laboratory, food processing, oil factory, biochemistry, agriculture and etc.

Description:

Easy operation: running with data set and time set, and automatic shut-down based on setting. Special function key for temperature setting. Auxiliary menu makes over-temperature, deviation calibration, and menu buttons lock, power outage compensation, power outage memory.

Overview of Equipment's available at Central Research Laboratories, Taif University

to conduct the research activity

N o	Unit	Equipment/Instru ment	Quan tity.	Comment
1	Tissue Culture and Stem Cell Unit	Safety Cabinet A2 Class II	2	Mycoplasma Test must be done regularly
		CO2 Incubator	2	High Standard of Safety Practice
		Cooling Centrifuge	1	All items used must be sterile
		Water Bath	1	
		Light Microscope	1	
		Fridge	1	
2	Genetic Unit	Laminar Flow	1	For RNA, sterile materials necessary
		RT-PCR	2	High Standard of Safety Practice to avoid contamination
		Gel Documentation	1	Do Not Touch Gel Directly
		Cooling Centrifuge	1	
		PCR	1	
		Electrophoresis	1	
3	Sequencing Unit	Next Seq	1	
		Mi Seq	1	
		Fluorometer	1	
		Micro PCR	1	

		Gel Fragmentation	1	
4	Flow Cytometry	Canto II	1	Diva software training is necessary
		Aria III	1	
5	Biochemistry	HPLC	1	
6	Histopathology	Cryostat	1	
		Microtome	1	
		Tissue Processor	1	
		Coverslipper	1	
		Paraffin wax	1	
		Embedding Station	1	
7	Working Area	Fume Hood	4	
		Cooling Centrifuge	1	
		Non - Cooling Centrifuge	1	
		Ice-maker	1	
		Water System	2	Produce Milli Q water and Distilled water
		Light Microscope	2	
		Water bath with shaker	2	
		Shaker Plate	1	
Analytical Balances	2			

		PH meter	1
		Multti Mode - Microplate Reader	1
		Pipettes	3 sets
		Incubator	1
		Confocal Microscope	1
8	Imaging Unit	Zeiss microscope fluorescence Inverted Microscope	1 1

**Overview of staff research activity and ongoing research activity by staff and students
at faculty of dentistry, Taif University**

Table 1: Research publication details of staff, Faculty of Dentistry-From the year 2015 to 2018

Sl. no	Year	Total number of publication	ISI index	Scopus index	PubMed index	Others	Affiliated to Taif University	Funded by Taif university
1.	2015	86	31	24	22	43	3	1
2.	2016	61	17	17	17	35	15	4
3.	2017	79	33	38	40	29	55	3
4.	2018	53	19	21	20	28	31	3
Total		279	100	100	99	135	104	11

Table 2: Published research articles by the staff and its indexing.

Sl. no	Staff name	Department	Total number of publication	Year of publication 2018 and 2019/others	ISI index	Scopus index	PubMed index	Affiliated to Taif University	Funded by Taif university
1.	Dr. Prashant M Battepati	Pedodontics	22	6/16	2	4	4	3	0

2.	Dr.Ros han Noor Moha med	Pedodonti cs	51	12/39	22	28	28	15	1
3.	Dr.Tar eekNab eel	Pedodonti cs	4	2/2	0	0	2	0	0
4.	Dr.Ma hitabSo liman	Oral surgery	11	4/7	1	3	8	8	3
5.	Dr. Syed Kowsa rAham ed	Oral surgery	3	0/3	0	2	2	0	0
6.	Dr.Tan veerKa rpe	Oral surgery	15	0/15	0	0	8	0	0
7.	Dr.Bhe emashe	Fixed prosthodo	8	3/5	0	1	1	3	0

	Man sali	ntics							
8.	Dr. EL Sayed Ali Abdull ah	Fixed prosthodo ntics	13	1/12	1	1	0	3	0
9.	Dr.Poo za Arora	Fixed prosthodo ntics	35	4/31	3	10	3	11	2
10	Dr.Mo hamed yousef	Removabl e prosthodo ntics	20	5/15	1	3	4	8	0
11	Dr.Mo hamed Ashour	Removabl e prosthodo ntics	7	0/7	0	0	2	7	2
12	Dr. Raghu Devan naPam ayya	Orthodont ics	20	2/18	4	9	11	9	0

13	Dr.Naif Felimban	Orthodontics	11	1/10	5	7	8	8	1
14	Dr.Ravikumar P	Operative dentistry	11	1/10	0	7	7	0	0
15	Dr.Haythem	Operative dentistry	7	0/7	0	0	1	1	0
16	Dr. Mohamed Ismail	Dental biomaterials	11	3/8	2	8	8	6	2
17	Dr.Enas T Enan	Dental biomaterials	15	7/8	8	8	8	4	0
18	Dr.Sakeenabi Basha	Community Dentistry	53	13/40	26	28	28	11	0
19	Dr.Amith Kumar	Community Dentistry	33	3/30	3	3	12	2	0
20	Dr.Mohamed Wael	Community dentistry	8	1/7	4	8	1	8	0

21	Dr. Manjunathaharisharanasha	Dental anatomy and oral biology	56	12/44	19	19	35	50	0
22	Dr. Wasim Sheik	Physiology	16	0/16	10	10	10	0	0
23	Dr. Hisham Al Sharkavy	Periodontics	22	4/18	7	5	5	4	1
24	Dr. Tamer	Periodontics	4	0/4	3	0	4	0	0
25	Dr. Amir Khan	Biochemistry	7	0/6	3	5	4	7	0
26	Dr. Mohammed Shakeel Mohammed Bashir	Pharmacology	52	2/50	5	3	5	4	0

27	Dr. Mohamed Abdulrahman	Oral basic sciences	17	4/13	4	0	0	2	0
28	Dr. Ayman Mandora	Endodontics	6	1/5	6	4	4	0	0
29	Dr. Ayush	Endodontics	10	0/10	0	3	3	0	0
30	Dr. Vipin Arora	Endodontics	51	3/49	3	17	5	10	1
31	Dr. Hassan Ali	Anatomy	4	0/4	0	0	0	0	
32	Dr. Umar Farooq	Microbiology	47	6/41	17	26	30	21	0

Table 2: Details of ongoing research activity by the staff.

Sl. no	Staff name	Department,	Total number of ongoing research activity	Total number Associated with students	Funded by Taif university
1.	Dr.Roshan Noor Mohamed	Pedodontics	3	0	0
2.	Dr.TareekNabeel	Pedodontics	2	1	0
3.	Dr. EL Sayed Ali Abdullah	Fixed prosthodontic s	1	0	0
4.	Dr. Raghu DevannaPamayya	Orthodontics	4	1	0
5.	Dr.Enas T Enan	Dental biomaterials	3	0	1
6.	Dr.SakeenabiBash a	Community Dentistry	3	0	1
7.	Dr.Amith Kumar	Community Dentistry	8	5	0
8.	Dr.Amir khan	Biochemistry	2	0	0
9.	Dr.MohamedAbdu Irahman	Oral basic sciences	3	0	0
10.	Dr.Umar Farooq	Microbiology	1	1	0

Table 3: Details of published students research activity.

Sl.no	Research title
1.	Tobacco smoking, is it really harmful? A structured review and recent advances.
2.	Awareness of biomedical waste (BMW) management among dental and medical students. International journal of advanced research 7(10):576-582 .
3.	Fluorides: the anti-caries balm or esthetic nightmare? EC Dental Science
4.	Effect of silver nanoparticles fillers addition on flexural strength, fracture toughness, impact strength, compressive strength and hardness of heat-polymerized acrylic resin. international journal of advanced research 7(9):1419-1422 .
5.	Effect of two-disinfection times on dimensional accuracy of vinylpolysiloxane impressions.International journal of advanced research (IJAR)
6.	Ral health knowledge and practice among intermediate school children in taif city, saudi arabia. international journal of advanced research 7(12):64-71
7.	The bi-directional relationship between diabetes mellitus and periodontal disease a structured review and contemporary concepts: Journal of Dental and Medical Sciences (JDMS)
8.	Effect of finishing and polishing on mechanical properties of composite. International journal of advanced research 7(7):430-440 .
9.	Assessment of oral hygiene habits and knowledge of caries among university students

	in taif city. international journal of advanced research 5(2):539-548 .
10	Incidence of white spot lesions after treatment with fixed orthodontic appliances. International journal of advanced research (IJAR).

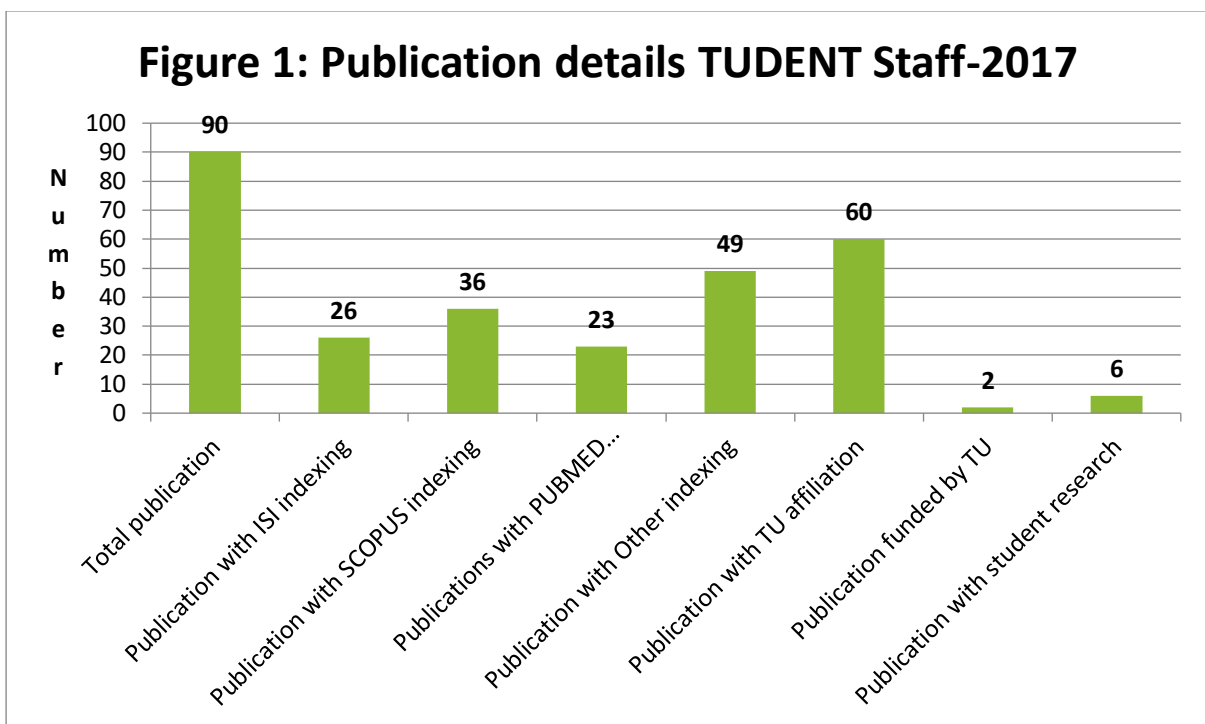


Figure 2: Publication details TUDENT Staff-2018

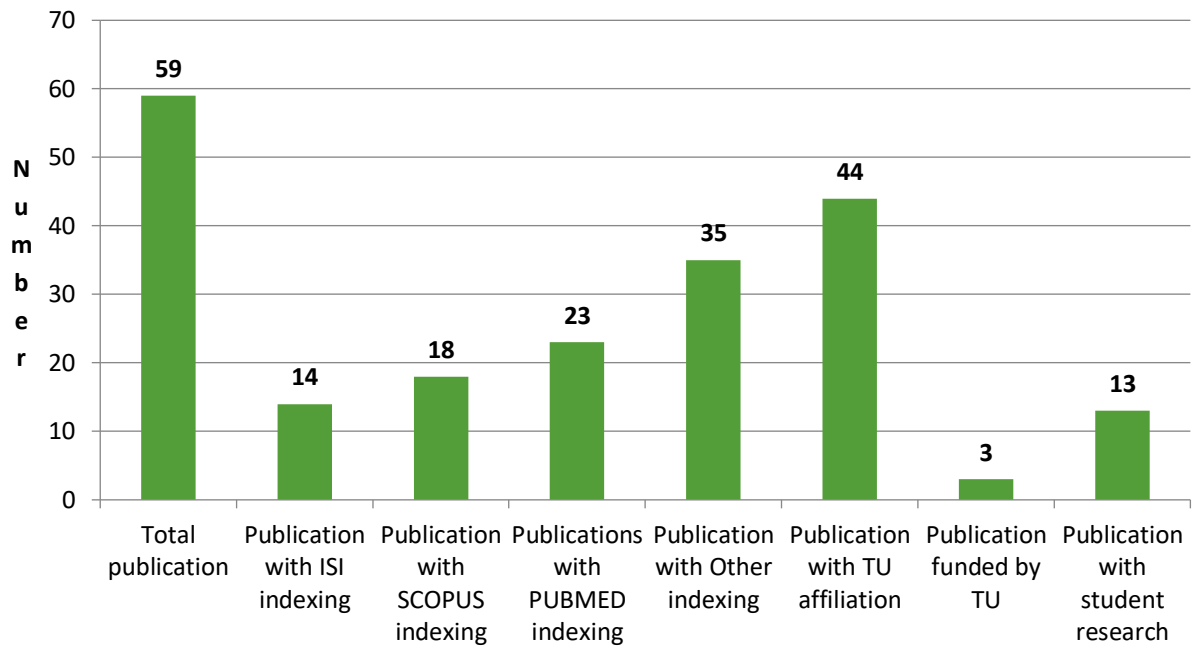


Figure 3: Publication details TUDENT Staff-2019

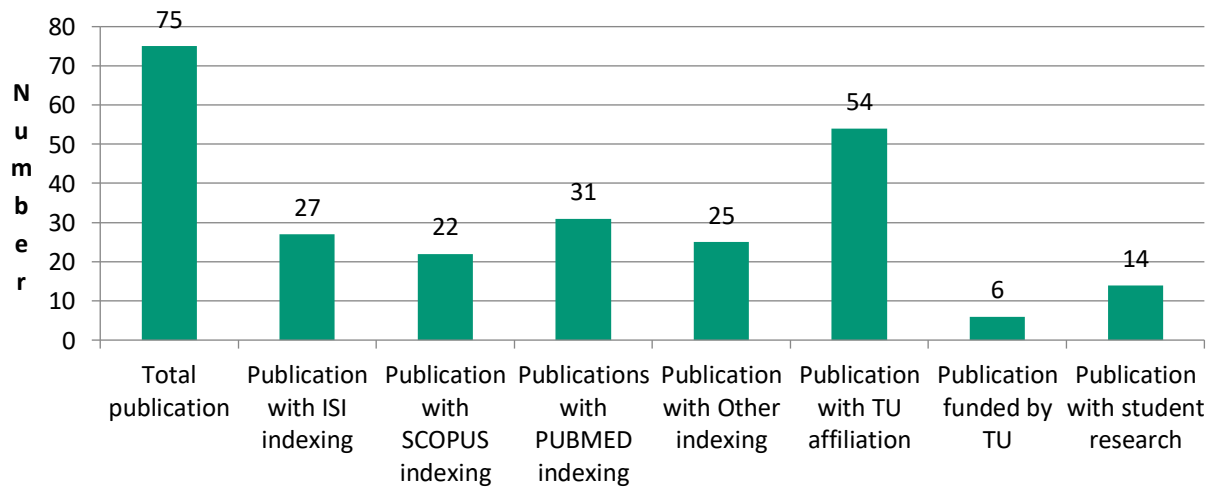


Figure 4: Publication details TUDENT Staff-2020

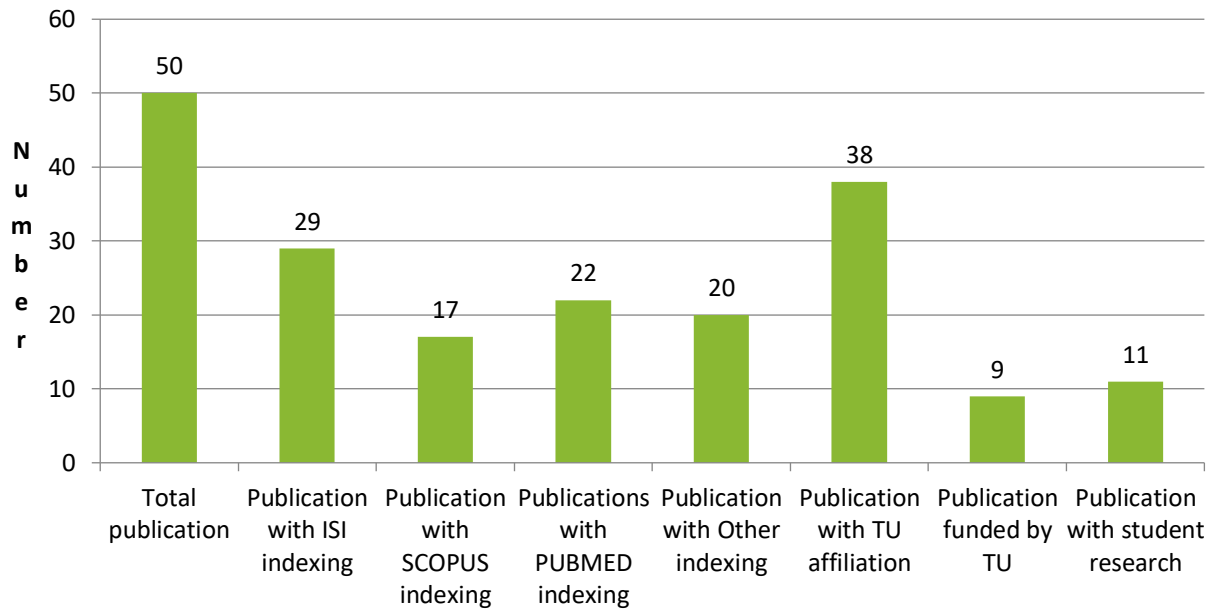


Figure 5: Citation details TUDENT staff from 2017-2020

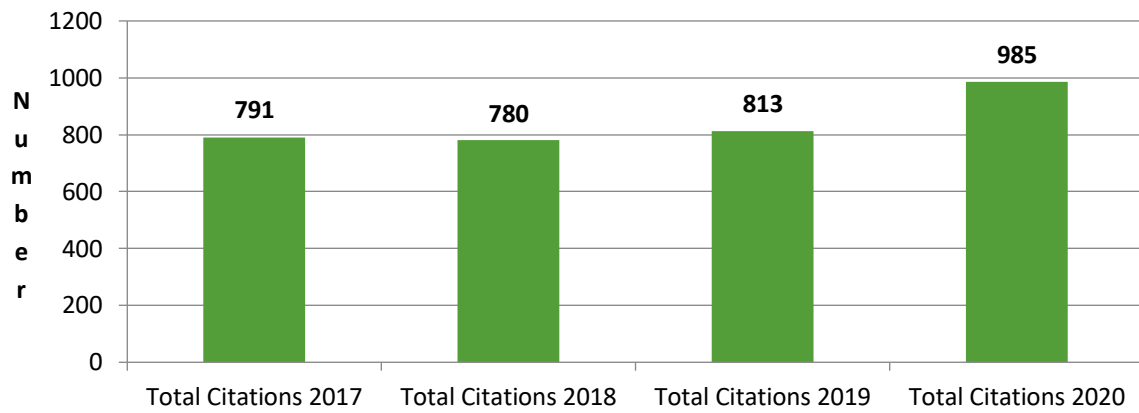


Figure 6: Total publication details TUDENT staff 2017-2020

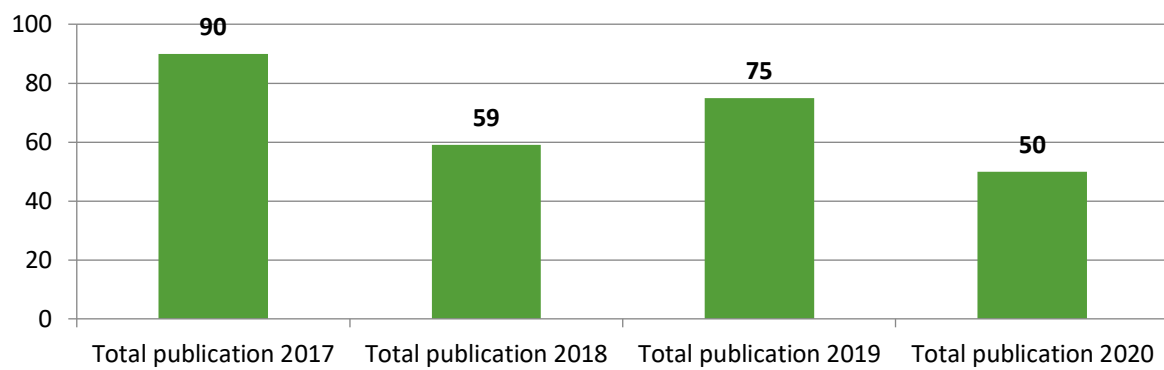
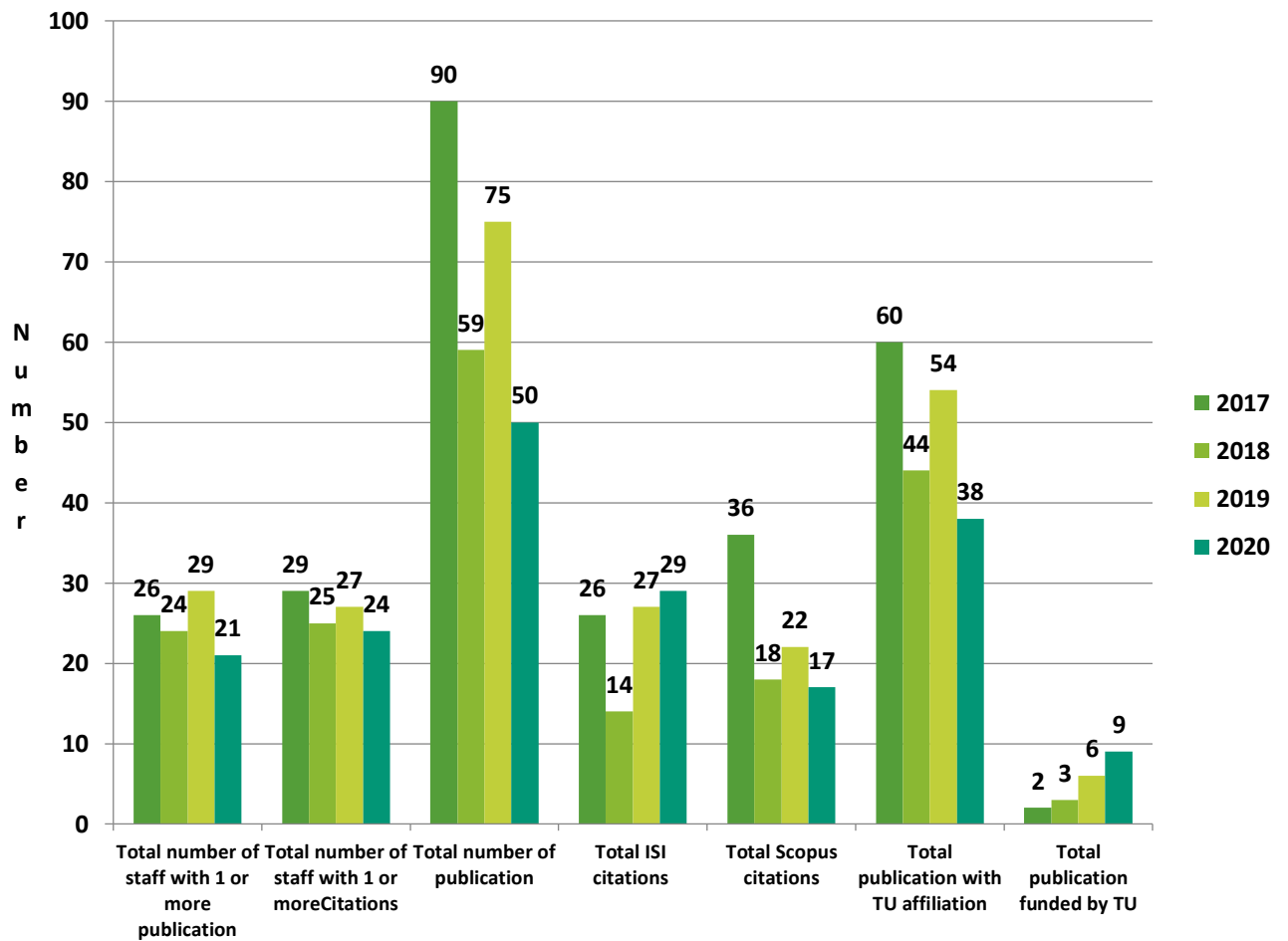
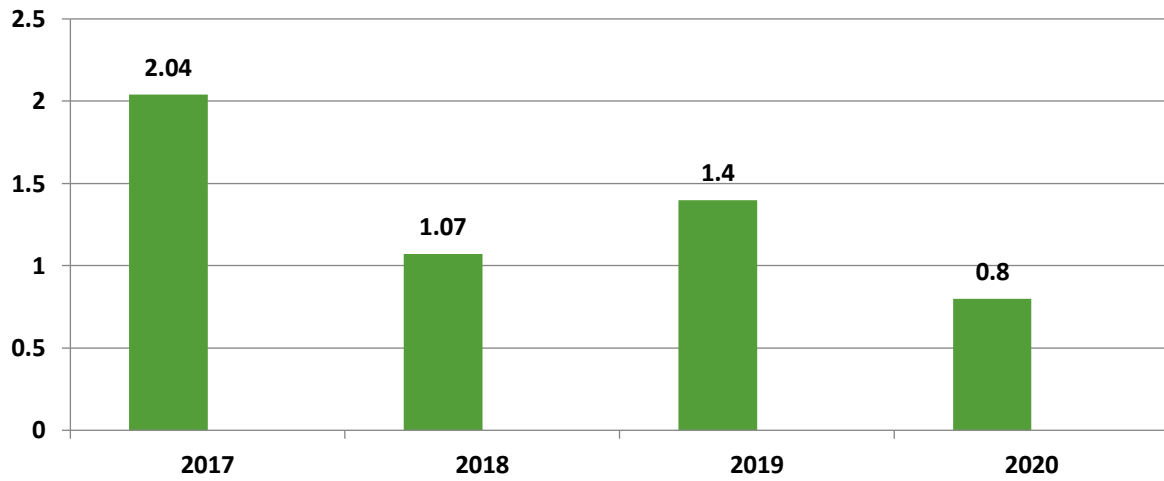


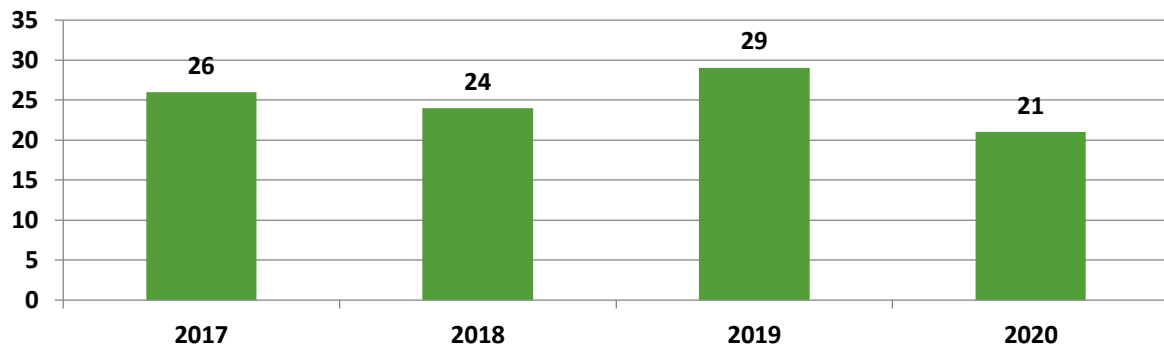
Figure 7: Overall publication details TUDENT staff- 2017 to 2020



**Figure 8: Rate of publication, TUDENT staff-
from 2017 to 2020**



**Figure 9: Number of TUDENT staff with one or
more publication from 2017 to 2020**



Summary of publication details of staff from 2017 to August 2021

Year	Total number of publications	Percentage of staff with 1 or more publication	Rate of publication
2017	90	59.1	2.04
2018	59	54.5	1.07
2019	75	65.9	1.4
2020	50	47.7	0.8
2021 (Till August)	49	43.2	1.1

Figure 10: Publication details TUDENT Staff-2020

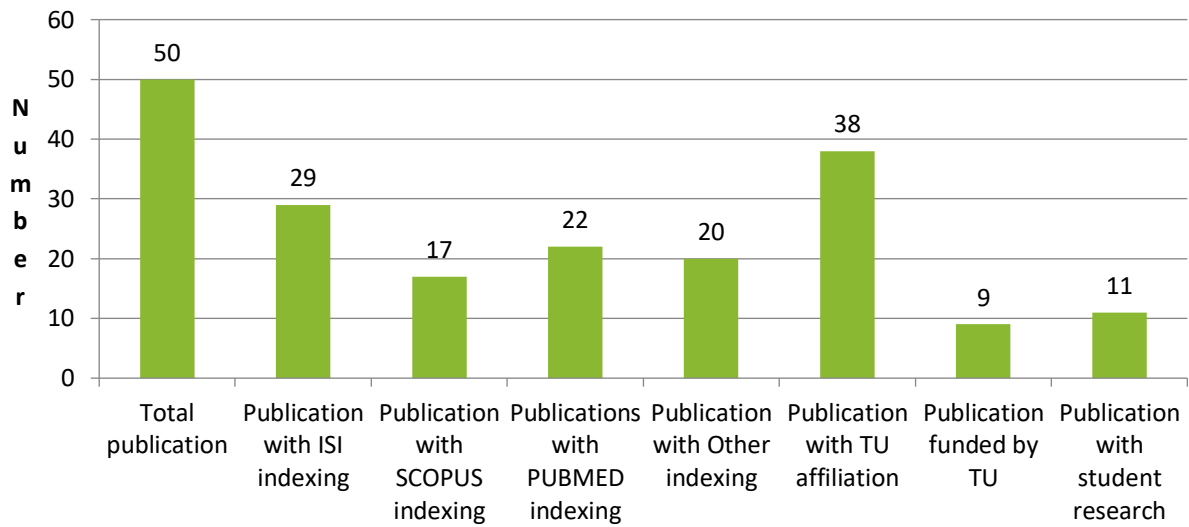


Figure 11: Publication details TUDENT staff year- 2021 (Till August)

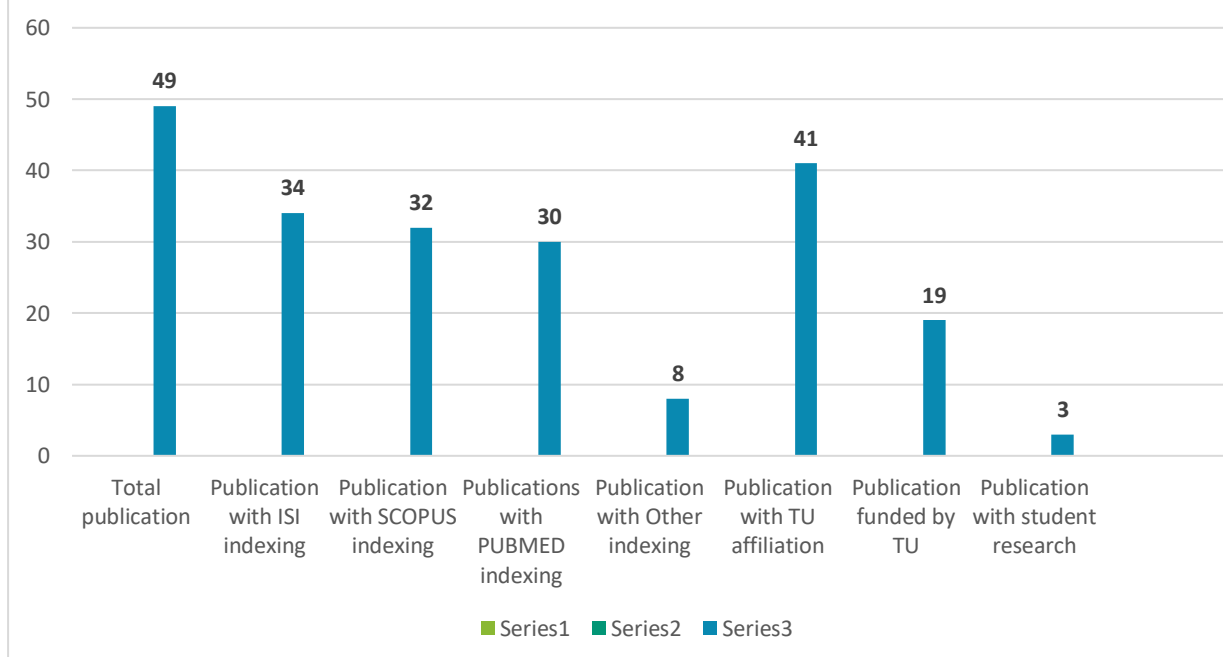


Figure 12: Total Citations of staff publications during the year 2020 and 2021 (Till August)

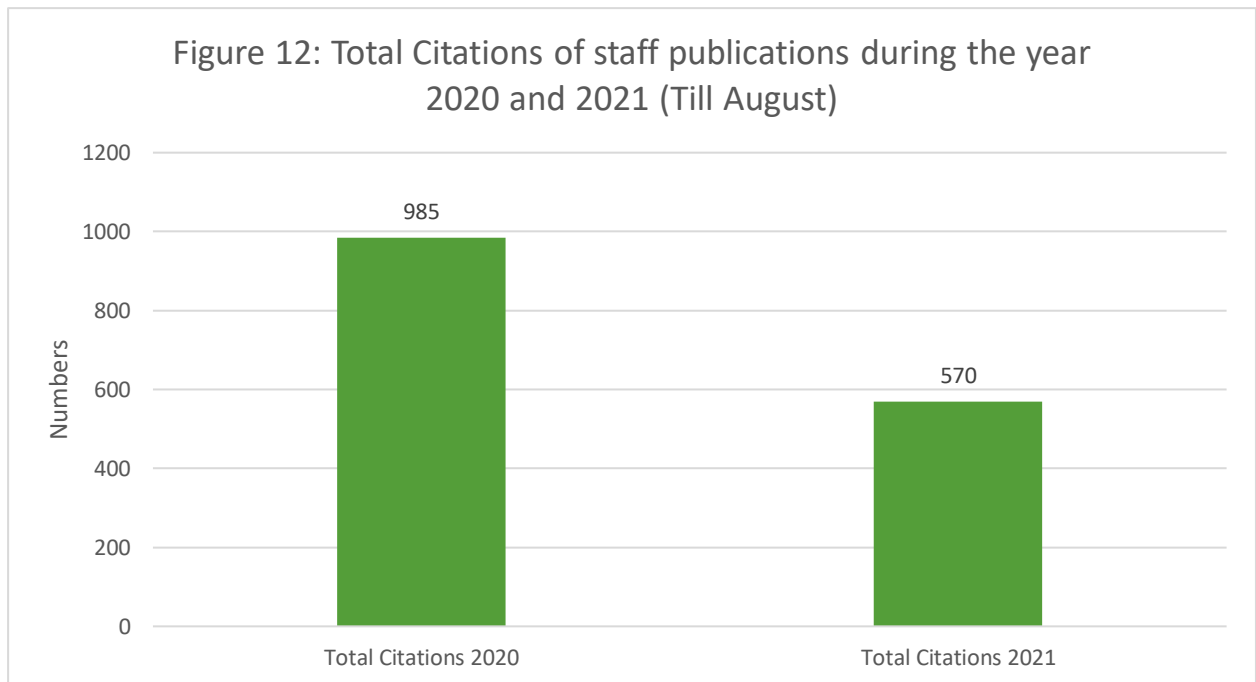
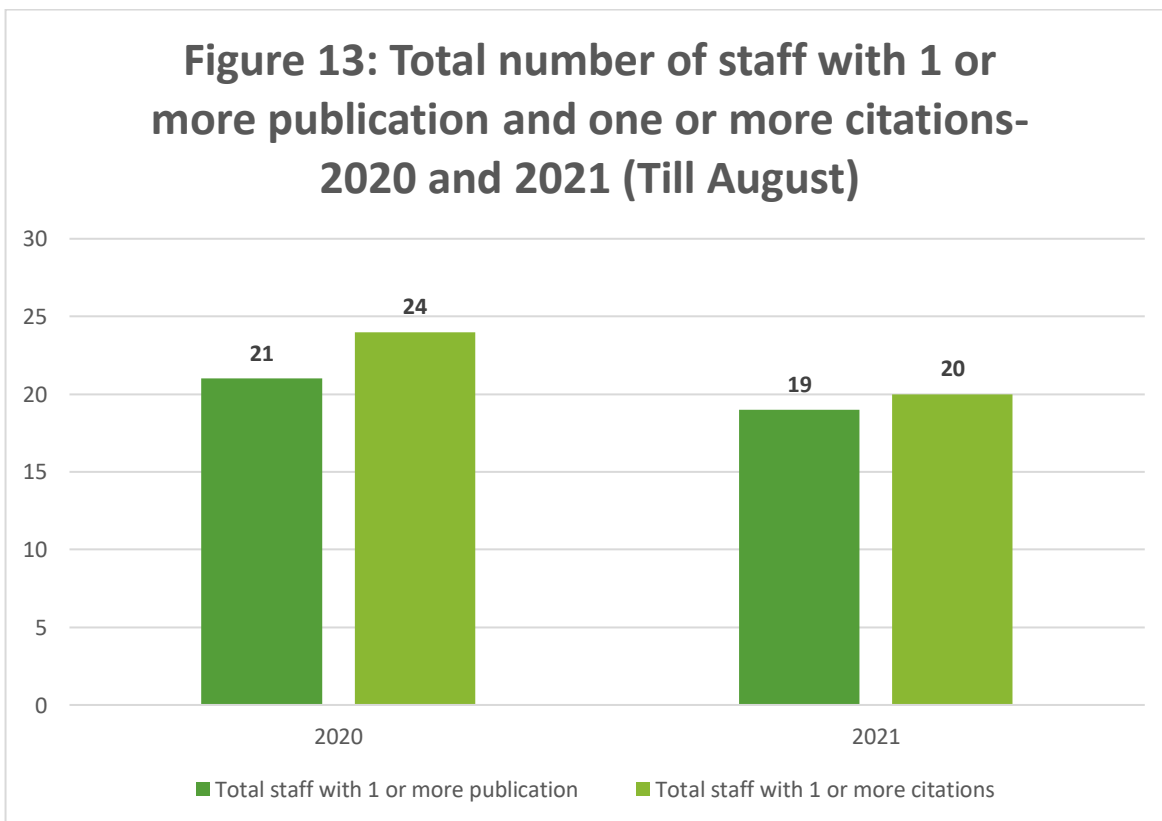


Figure 13: Total number of staff with 1 or more publication and one or more citations- 2020 and 2021 (Till August)



References

1. Research Ethics-TU Executive Bylaws.
2. Executive Bylaws of the Law of Ethics of Research on Living Creatures
3. Strategic plan- Deanship of Scientific Research, Taif University

