

# **Scholars in HeAlth Research Program Progress Report**

**June 2020**

## Table of Contents

OVERVIEW OF THE PROGRAM.....	4
A. About the Program.....	4
B. Motto.....	4
C. Program’s Original Goals and Objectives.....	4
D. Program Description .....	4
E. Program Administration.....	5
F. Summary of Program’s Achievements .....	6
PROGRAM EVALUATION .....	6
A. Program Evaluation by Scholars .....	6
B. Enhancements since Program Launch.....	7
1. SHARP Summer Certificate Program .....	7
2. SHARP MSc Program .....	9
C. Evaluation of Program Effectiveness.....	9
1. SHARP MSc Program .....	9
a. Program Outreach.....	9
b. Time to graduation.....	10
2. SHARP Summer Certificate Program .....	10
a. Program Outreach.....	10
i. Applications and Outreach.....	10
ii. Nationalities and Gender Distribution .....	10
b. Pre-training Background.....	10
c. Post-training Employment.....	11
i. By Field of Study .....	11
ii. By Geographical Area .....	11
iii. In Academic Institutions.....	11
d. Scientific Contributions and Achievements Post SHARP over the Last 8 Years.....	12
1. National and International Awards .....	12
2. 21 Post-training Degrees.....	14
3. Research Productivity during and Post-training .....	14
2. SHARP MSc Program .....	15
d. Program Outreach.....	15
i. Nationalities and Gender Distribution .....	15
ii. Research Productivity and Scientific Contributions.....	15
iii. Other Capacity Building and Research Development Activities .....	25

1. Workshops .....	25
2. Major SHARP Lectures .....	25
3. Enrollment in SHARP courses by non-SHARP students:.....	26
D. Scholars Testimonials .....	26
E. SHARP in the News .....	27
F. PD Invited Lectures.....	27
G. SHARP Rising to Challenges .....	28

## OVERVIEW OF THE PROGRAM

### A. About the Program

The Scholars in HeAlth Research Program (SHARP) is an interdisciplinary Program that was established at the American University of Beirut (AUB) in 2012 in large part thanks to a four-year (extended to 5 years) capacity building grant from the National Institutes of Health (NIH)/Fogarty International Center (FIC). This parent grant proposal successfully competed against 64 applications to the Fogarty International Center (FIC) in 2011, 14 awards were granted, only 2 of which were international as primary centers, AUB was one of them.

SHARP is an interfaculty collaborative effort involving co-investigators from the Faculty of Medicine (FM), Faculty of Health Sciences (FHS), Faculty of Agricultural and Food Sciences (FAFS), and Hariri School of Nursing (HSON).

The Mission of SHARP is “To provide superior didactic education complemented with state-of-the-art interactive and practical training in health research, with a focus on Non-Communicable Diseases (NCD) research. It is intended for physicians and other health care professionals, to improve and advance the health care agenda for Non-Communicable Diseases (NCDs) in Lebanon and the region”.

### B. Motto

**Acquire** essential skills to conduct clinical and translational research

**Engage** a diverse pool of students from multiple relevant disciplines

**Advance** the health care agenda of Non-Communicable Diseases in the region

### C. Program’s Original Goals and Objectives

SHARP’s goal is to generate the human capital needed to conduct NCD-related research in general, and especially of NCDs most relevant to the needs of the LMIC (Lebanon) and its region. SHARP provides superior didactic teaching and hands on practical research experiences to health graduates. The Program creates and sustains a cadre of highly trained investigators in patient-oriented as well as population-oriented research from various disciplines: physicians, nurses, epidemiologists, nutritionists, and others interested in pursuing careers in NCD research. The Program also provides trainees with leadership and management skills enabling them to become change-agents in research groups, academic departments, or other health care settings.

SHARP is a unique multifaceted, novel, and collaborative Program at multiple levels:

1. It targets stakeholders engaged in health research from various educational and training backgrounds
2. It combines a curriculum that addresses the needs of population-oriented as well as patient-oriented research
3. It pools resources and disciplines from the various collaborating schools at AUB
4. It bridges research and academia, clinical practice, management and health policy
5. It addresses NCD health needs in Lebanon and the region

The first SHARP Summer Certificate started in 2013 with 18 trainees. This number has grown throughout the years and to date, the SHARP Summer certificate has graduated 170 trainees and an additional 32 students are currently enrolled.

**As of 2017, the SHARP Summer Certificate program has become self-sufficient.**

### D. Program Description

The Scholars in HeAlth Research Program is a joint Faculty of Medicine (FM) and Faculty of Health Sciences (FHS) graduate Program. It accommodates three types of training options: short- term, medium-term, and long-term. Each option includes a mix of didactic training based on select core courses with implementation of a hands-on research practicum, training or thesis project.

Short-term Training – SHARP Summer Certificate. The intensive SHARP Summer Certificate Program consists of 12 credits and is a core component to all three training options. The SHARP summer certificate provides the essential foundations in quantitative methods and fundamental skills to conduct research. The core disciplines include epidemiology, biostatistics, research ethics, and library sciences/informatics. These are complemented with a practical hands-on training course in the analysis and reporting of large health-related datasets in NCDs. Credits obtained in the SHARP Summer Program are transferrable to fulfill requirements of the SHARP Master of Science (MSc) degree or those of already established MSc degrees offered in the collaborating Faculties/Schools.

Medium-term Training – SHARP Summer Certificate plus Hands-on Research Project. This training option extends over a total period of 5-6 months. It is the path chosen for Scholars after completion of the SHARP Summer Certificate and consists of few months' internship with one of the NCD research groups affiliated with the Training Program Faculty/Schools. During this internship, the Scholar will either complete a short-term independent project in consultation with a major lab at the institution partaking in NCD health research or will assist with on-going projects.

Long-term Training – SHARP Master of Science (MSc) Degree. This training option is a 1-2 years long Program leading to the MSc degree that requires the completion of a total of 35 credit hours that include a required NCD-research thesis. Following the completion of the 12 credit SHARP summer certificate, Scholars complete the degree requirements that include additional required core courses, and a mentored research project culminating in a thesis on an NCD research project). SHARP MSc is a unique multifaceted, novel, and collaborative Program at multiple levels:

1. It targets stakeholders engaged in health research from various training backgrounds
2. It combines a curriculum that addresses the needs of population-oriented as well as patient-oriented research
3. It pools resources and disciplines from the various collaborating schools at AUB
4. It bridges research and academia, clinical practice, management and health policy
5. It addresses NCD health needs in Lebanon and the region
6. It is the ONLY MSc program targeting physicians interested in a career in clinical translational research

The summer program and the MSc degree are open to graduates of various health fields.

## **E. Program Administration**

The Program Director (PD) was advised by 5 Training Advisory Group members: 2 senior faculty members from Brigham and Women's Hospital, and 3 senior faculty members from AUB, all with extensive experience in leadership and administration of successful training programs, mentoring, and education. Four senior faculty members served on Program Executive Committee, and they served as the internal advisory group to the PD, assisting the PD in the implementation of all aspects of the Training Program, and were in charge of oversight of its day-to-day operations. The Executive Committee (EC) met monthly, and served as the admissions committee to review applications to the summer certificate and master degree Programs. Two consultants provided additional relevant expertise to the Program development, one from the Harvard T.H. Chan School of Public Health, on curriculum development, and another retired faculty, VP research at the University of Chicago, on research ethics/RCR. PD, EC, and local and US TAG met (virtually for US TAG) every 3 months to review progress reports prepared by PD and EC.

SHARP has filled a major gap in post-medical training. It has been highly sought after since Program launch in 2013. We had anticipated to train 20 certificate trainees/year, some of whom would go on to intermediate and long-term training, and 2-4 MSc trainees. SHARP has exceeded pre-set expectations. To-date, the program has graduated 7 summer certificate cohorts, 170 trainees; the majority completed intermediate and long-term training, including 9 MSc graduates and 7 more in progress. 32 students are currently enrolled in the 8<sup>th</sup> summer certificate. Trainees are mostly from Lebanon, but also from Bahrain, Egypt, Jordan, Libya, Pakistan, Palestine, and Syria.

## **F. Summary of Program's Achievements**

The objectives and aims of the program have been met, and its output exceeded all expectations. Since 2013, the Summer Certificate Program graduated 170 trainees (short-term training). Few, 4%, completed independent projects that resulted in 9 publications (intermediate training). The majority of the Summer graduates (51%) immediately continued into one path for long-term training, in the form of research fellowships. Of these, 45% were at AUB, and 55 % were abroad (mostly in the US). Another 9% of the Summer graduates, enrolled in the SHARP MSc track, 9 have graduated, 7 are in progress, and 1 student completed the coursework but not the thesis. 32 trainees are currently completing the short-term training and 3 are expected to start the long-term training in Fall 2020-21.

SHARP graduates have published a total of 848 publications during and post their training. The average number of publications/SHARP trainee is 4.98, more than twice the FIC published average of 1.98

The solid foundations provided by the Certificate Program has made its completion a requirement of the Lebanese Medical Training Leadership Award (LMTA) at Johns Hopkins, and as of to-date, 12 trainees were selected for these awards. One is already back as faculty at AUB, and another graduate from the first cohort is co-teaching one of the summer courses. In addition, the Obstetrics and Gynecology Department at AUBMC has made the certificate program a requirement for the department's fellow. Several graduates from the SHARP summer program have completed a total of 21 MSc degrees or PhD degrees based on the foundations of the SHARP Summer certificate at prestigious institutions. The students' SHARP Summer Program coursework was provided equivalence during their MSc and PhD degrees. The post-training degrees are: 11 degrees from the American University of Beirut, and 10 degrees from` abroad. (see section C. Evaluation of Program Effectiveness).

The parent grant was fully funded for the first 4 years (2013-2016) and covered the training of 103 summer trainees, and 11 MSc trainees. Since then, an additional 67 summer trainees graduated and 5 MSc enrolled at reduced institutional tuition fees. To-date both core curricula of the training Program are self-sustainable, with continued institutional commitment (see Budget Justification). Sustainability of the on-site Summer Program Certificate is possible due to reduced tuition fees by 75% for the Certificate Program and by 50% for the MSc degree. The latter is possible through cost-sharing support mechanisms the university grants through the graduate assistantship program. The Dean at FM will continue honoring these previous commitments, and the dedication of reduced tuition fees to the SHARP operational fund to support the core established Program. The tuition fees of the blended certificate and of new quantitative modules will be granted similar support.

## **PROGRAM EVALUATION**

As outlined in the parent grant, continuous monitoring and critical evaluation are keys for pinpointing areas for improvement, and for assessing the Program's effectiveness in achieving its goals. This constant monitoring and assessment has been key to the sustainability and growth of SHARP and instrumental in creating enhancements and identifying new outreach strategies that provided the basis to formulate goals in the proposed renewal.

The parent grant is relatively young in the making (8 years), and information provided herein relates to short and somewhat intermediate indicators, as detailed in the original proposal. These included evaluating the impact of the Program, assessing Faculty and Scholar-related factors, along with interface internal (Program EC, mentors, teachers) and external (local and US TAG) evaluation.

### **A. Program Evaluation by Scholars**

Scholars were asked to fill a form rating several course indicators such as clarity of course objectives, extent of in-depth coverage, achievement of course goals, balance between theory and applied skills, quality of course materials, and appropriateness of assignments. In addition, informal feedback from Scholars was obtained by

PD and summer Program director on a weekly basis at Pizza Friday lunches. Teaching faculty were invited too, and this was a forum for summer Scholars to provide feedback and convey suggestions for fine tuning some aspects of the Program, in terms of format and content, as detailed below. The Summer Certificate Program has steadily improved over the past 8 years, and enhancements made based on the continuous monitoring and evaluation of the Program curriculum. LimeSurveys administered at course completion and at the end of the Summer Certificate Program revealed that Scholars were quite satisfied and that their expectations for the Program were met, with ratings ranging from 87% to 100%. Their specific feedback regarding the quality of lectures, type of projects and assignments, and quality of computer labs/statistical software training, were equally high. The highest ratings were for type of course projects (80-to 100%), quality of computer labs and SPSS software training (87-100%). The highest satisfaction rates were observed in the most recent years. Course-specific evaluations ranged a slightly wider spectrum, with a remarkable and sustainable 100% for Biostatistics, closely followed by Large Data Sets (LDS, 86%-100%). In the early years of the Program, a third of Scholars reported that the amount of work required for Epidemiology was excessive. This percentage steadily declined after introducing course modifications, down to almost none, in 2019. A similar declining trend was observed for the Biostatistics, and LDS courses, after introducing relevant modifications, described in Table 1. The Mock IRB sessions offered in the Ethics/RCR course were received the highest ratings consistently throughout the years (91%-100%).

### **MSc Graduate Students' Exit Survey Response**

<b>Survey Question</b>	<b>% Positive Responses</b>
The academic advising system in my department/program was helpful to me	100%
There were sufficient research opportunities available	100%
My overall experience with my department/program was positive	100%
My research mentors had a good knowledge of their field	100%
There was helpful thesis advising in my department/program	100%
There was a sufficient amount of graduate assistantships available in my department/program	100%
There was a high quality of teaching in my graduate program.	100%
Graduate student satisfaction with computer facilities and services (e.g., computer labs)	100%
Graduate student satisfaction with work/study space	100%

### **B. Enhancements since Program Launch**

Based on the evaluations received from the Scholars, the teachers, EC, and TAG members, the following enhancements were implemented in the Summer Certificate Program.

#### **1. SHARP Summer Certificate Program**

The below table shows some of the suggestions received from the Scholars post their completion of the Program and the actions taken by SHARP to address them.

<b>Scholars Feedback</b>	<b>Actions taken by SHARP</b>
<p>“The load of work was much more concentrated towards the end. I would have preferred if it was equally distributed over time”.</p> <p>“Suggest starting LDS following full biostatistics. Add courses on analysis of continuous and categorical data”.</p>	<p>-The summer SHARP certificate Program was redesigned to offer a more modular format of the courses.</p> <p>-LDS (Analysis and Reporting of Large Datasets) is currently being offered as a full one-week</p>

Scholars Feedback	Actions taken by SHARP
<p>“I think this” (LDS) “is the course that benefited me most; I would love if it was at the end (after biostatistics)”.</p> <p>“I believe that epidemiology shall be incorporated with biostatistics or at least be done with epi before LDS”.</p>	<p>compressed course (8:30 a.m. to 4:30 p.m.), after the completion of the biostatistics and epidemiology courses. This gives trainees more time to focus on their research projects after acquiring the needed skills in epidemiology and biostatistics.</p>
<p>“More article discussions in class as groups”</p>	<p>-The course content of Epidemiology and Ethics courses were modified to include more article discussions for enhancing students understanding and promoting their engagement.</p> <p>-The delivery of ethics RCR course was enhanced to ensure that the teaching faculty included HIP director/PD in addition to involving at least one of the two IRB co-chairs in each summer ethics/RCR course.</p>
<p>“The second week and last week were very loaded in assignments, some of which could have rescheduled or cancelled”.</p> <p>“Long lectures - Overlap of projects during the last week”.</p> <p>“Overlapping of the projects, quizzes, homework and projects”.</p>	<p>The numbers of group projects were decreased from 3 to 1 which represented a combined illustration of all concepts and skills learned in ethics, epidemiology, biostatistics, and analysis skills in the large datasets practicum at the end of the summer.</p>
<p>“More application exercises (like a data analysis project) and definitely less exams”.</p> <p>“It would have helped if we had a publishable project that we can start working on after week 2”.</p>	<p>The LDS course was re-designed to provide publishable projects using National Surgery Quality Improvement Program (NSQIP) datasets from Year 2 and on. The Scholars were provided with the US NSQIP public database, developed research question and analysis plan, conducted analyses, and presented them in power point presentations attended by all scholars, executive committee members, teachers, mentors, TAG members and faculty at large. Scholars were also asked to prepare a final report which had the major components of a scientific journal manuscript including a scientific abstract.</p>
<p>“Add survival analysis and cox regression lectures”.</p> <p>“Propensity score should be added”.</p> <p>“Include ROC curve lectures”.</p> <p>“More statistical analysis methods, also more about clinical trials and systematic reviews”.</p>	<p>The LDS and Biostatistics courses incorporated sessions to expose trainees to these topics from Year 2 and on.</p> <p>Clinical trials course is an independent course being offered to SHARP MSc students in the Fall.</p>
<p>“We need more guidance while writing our proposals concerning the analysis plan, statistical analysis and sample size calculation”.</p>	<p>These topics are now explicitly addressed in Epidemiology and Biostatistics courses as well as the LDS.</p>
<p>“The long hours of classroom, why not online learning specifically for the Ethics &amp; Epidemiology course and not the others.”</p>	<p>SHARP is submitting an application for a new training Program which combines online and onsite courses.</p>
<p>“Too intense, no time to really understand and apply what we learned perfectly. More one on one group discussions</p>	<p>Additional sessions were added as wrap up sessions during the Summer Program based on</p>



Scholars Feedback	Actions taken by SHARP
with the instructors for the epidemiology project”. “I think it would be very useful towards the end of the Program, and in parallel to LDS, to have lectures putting all the info we have learned in sharp and use this to learn how to conduct a research project from A to Z. How to go from a research hypothesis to publication in a step by step matter”.	the demand of the trainees. A session on manuscript submission was added at the end of the summer Program to prepare Scholars for publishing their research work. Other sessions included a visit to the animal care facility and a lecture by the IRB director and OGC director.

## 2. SHARP MSc Program

Considering the mixed reviews of the Longitudinal Seminar Series (LSS) by MSc trainees, its marginal added value, and the fact that its total credit number (N=40) by far exceeded that of all MSc Programs at AUB, and equivalent Programs in the US (30-35), EC unanimously voted to decrease the number of credits to 35, by foregoing the 4 credit LSS course and a credit elective. The robustness of the SHARP curriculum was not affected since the core competencies in LSS were covered by other core courses in the MSc curriculum. EC shared the information with TAG members, who concurred, and a request was put forth to the Joint Graduate Studies Committee of the Faculty of Health Sciences and Medicine, and then to the University Board of Graduate Studies. It was approved by both entities and has been recently approved by the University Senate. The following presentations were developed and delivered by SHARP faculty, (1) Scientific Abstract and Manuscript Preparation, (2) Grant Writing Workshop and Training, (3) Advanced Research Ethics and Responsible Conduct of Research.

### C. Evaluation of Program Effectiveness

#### 1. SHARP MSc Program

##### a. Program Outreach

Year	Applicants*	Accepted	Registered	Selectivity (Accepted over Applicants)	Yield (Registered over Accepted)
2013-14	3	3	3	100%	100%
2014-15	11	10	3	91%	30%
2015-16	11	6	3	55%	50%
2016-17	8	4	2	50%	50%
2017-18	10	6	3	60%	50%
2018-19**	7	0	0	0%	0%
2019-20	8	4	3	50%	75%

\*Some of these applicants were not eligible to be admitted to the MSc program since they hadn't completed the SHARP Summer Certificate which is a requirement for the MSc program.

\*\*In 2018-19, we only had one eligible student. The others had not completed the Summer certificate. The student registered as “not working for a degree” and transferred to SHARP MSc in 2019-20.

On average, we have 7 students enrolled per year. This is a satisfactory level of enrollment given the nature of the MSc program which requires the availability of mentors for thesis work, for clinical trials courses, and for systematic reviews courses. Given that are MSc students are medical graduates, they require mentors from the Faculty of Medicine and these often do not have protected time to mentor students which limits the availability of eligible mentors and limits the number of students we can accept.

SHARP MSc students are required to complete the 12 credits SHARP Summer certificate as a requirement for acceptance into the MSc program. Due to the rigid schedule of the Summer certificate, this would limit the

number of potential applicants. In addition, we regularly contact Deans of all Faculties at AUB, Deans at other universities in Lebanon and the region to increase enrollment.

**b. Time to graduation**

On average, students graduate 2-3 years post enrollment. This is adequate given that most, if not all, of our students are medical graduates who are either practicing physicians, residents, or fellows and are enrolled in the MSc program at the same time.

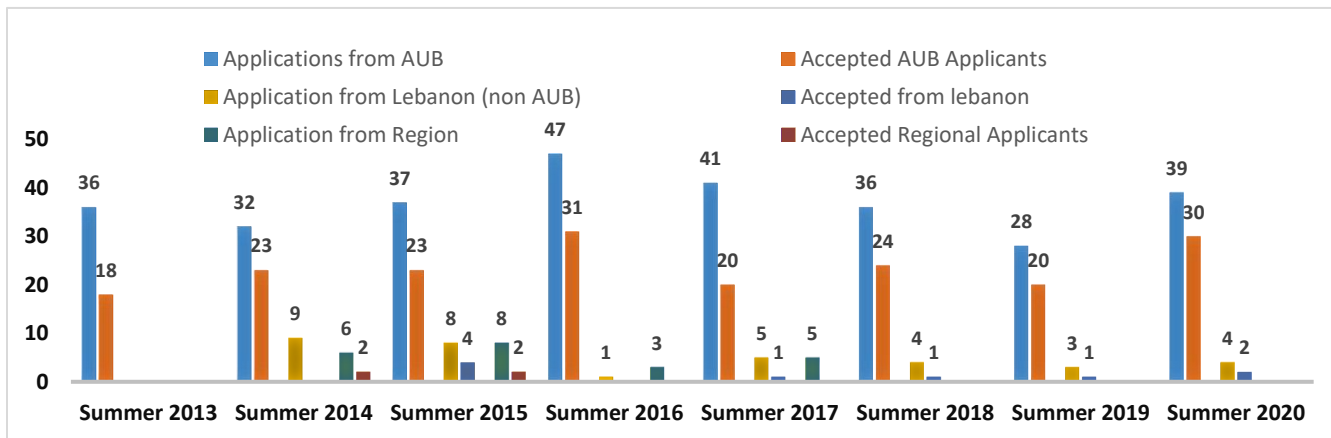
In order to encourage our students to stay on track and in line with the expected time needed to graduate, we schedule advising meetings with them every 2 months during which we follow up on the thesis progress and provide guidance and assistance as needed. In addition, the program coordinator follows up with the students via email and phone in between meetings to follow up on their timelines.

**2. SHARP Summer Certificate Program**

**a. Program Outreach**

**i. Applications and Outreach**

The SHARP Summer Program has received a total of 352 applications over 8 years. Out of these, 296 were from the AUB, 34 were from institutions in Lebanon, and 22 were from the region.



**Figure 1: Applications to SHARP Summer Program received between 2013 and 2020**

A total of 202 were accepted (57%) and enrolled in the SHARP Summer Program including 189 trainees from AUB, 9 trainees from Lebanese institutions, and 4 trainees from the region.

**ii. Nationalities and Gender Distribution**

Out of the 202 SHARP Summer trainees, 109 are females and 93 are males (54%/46% sex ratio). The majority were from Lebanon, 14 (7%) are from the Middle East North Africa (MENA) region: 5 from Syria, 4 from Jordan, 3 from Palestine, 2 from Egypt, and one trainee was enrolled from each of: Libya, Bahrain, Iraq, Pakistan, United Kingdom, and Australia.

**b. Pre-training Background**

In terms of degrees, 175 of our trainees had a medical degree at the time of application, 11 had an MSc in Nursing, 2 had PhDs, and 14 had other degrees (Nutrition, Medical Lab, Pharmacy, etc.). In terms of pre-training positions, most of the trainees were medical students during their last year of medical school (85), followed by residents (41), and research fellows (29). For those coming from a nursing background, most of our applicants have been nursing instructors.

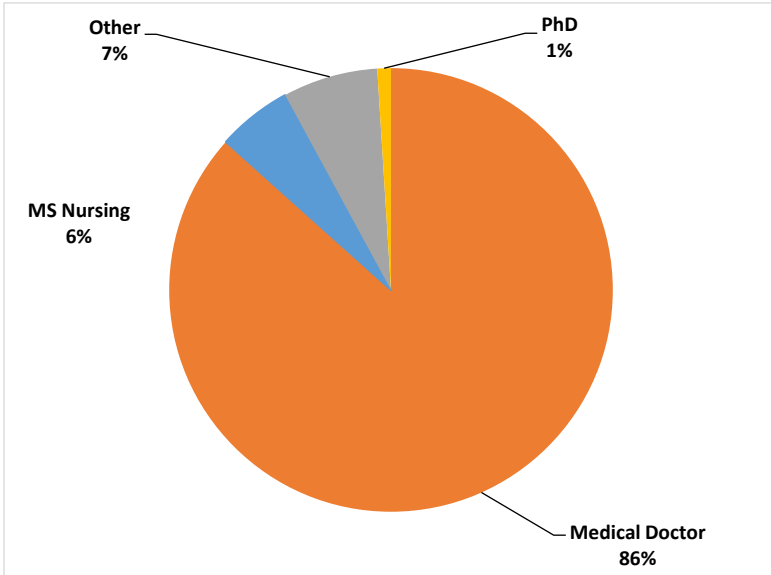


Figure 2: Pre-training background of SHARP trainees

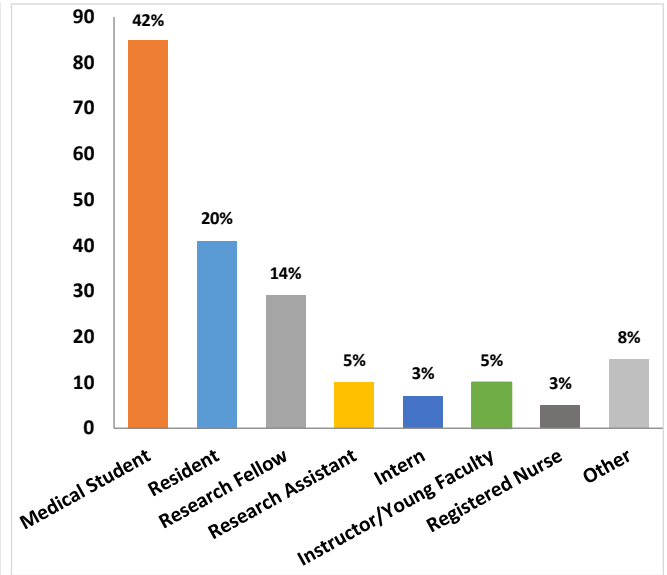


Figure 3: Positions of SHARP trainees before joining SHARP.

### c. Post-training Employment

#### i. By Field of Study

After completing the summer certificate, most of the trainees with an MD degree go into either clinical employments (residency) or research employments (fellowships). Nursing instructors go back to their pre-SHARP employment as instructors, and some students go on to complete a Master’s degree (SHARP MSc, MPH, etc.) or a PhD degree.

#### ii. By Geographical Area

In terms of geographical distribution, 91 of our graduates are in Lebanon and 79 are abroad (United States and Europe). Many summer medical graduate trainees pursue the SHARP summer to build their CVs and compete for residency and fellowships at AUB or abroad, many in prestigious institutions in the US including: Brigham and Women’s Hospital, Case Western Reserve University, Duke University Medical Center, Henry Ford Health System, Johns Hopkins School of Medicine, MD Anderson Cancer Center, University of Chicago, University of Maryland, University of Pittsburgh, University of Pennsylvania, Washington University, Baylor College of Medicine, Mayo Clinic, Oregon Health & Science University, and Saint Louis University. The hope is that 5-10% will ultimately come back to capacity build in their home country. It is a bit early to assess this assumption so early in the lifetime of this young grant. Interestingly, however a higher proportion of those who were further in the formative years of their careers are retained (see section below). Indeed, of the 5 faculty members SHARP graduates who joined AUB within the last 3 years, 2 completed the summer certificate and came back after completing higher training in the US, and 3 who were more senior, completed their MSc and immediately joined faculty ranks.

#### iii. In Academic Institutions

Seven of SHARP summer trainees have joined as Assistant Professors at AUB: one after having completed a PhD in nursing at University of Colorado, 3 after completing SHARP MSc Program (Endocrinology, Cancer Surgery, Psychiatry) and three after completing their specialty fellowships (Rheumatology, Emergency Medicine, Radiation Oncology). Indeed, of the 6 medical graduate who joined as faculty members at FM, within the last 3 years, 2 completed the summer certificate and came back after completing higher training in the US, one completed the certificate over 2 summers at the time she joined faculty, and 3 who were more senior, completed their MSc and immediately joined faculty ranks.

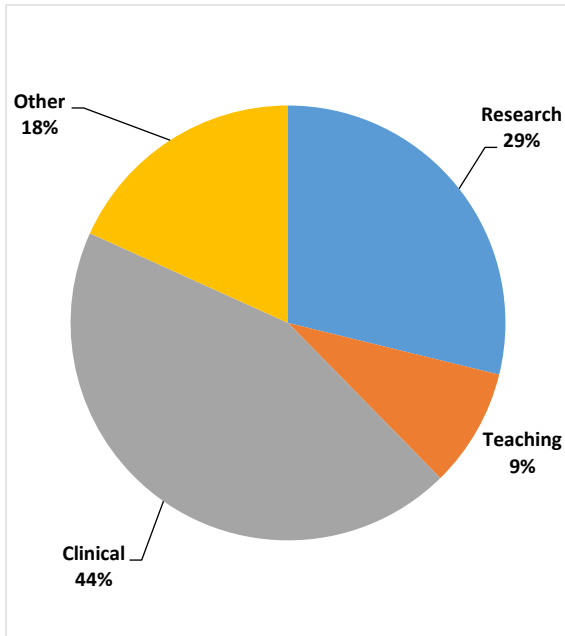


Figure 4: Post-training employment by field

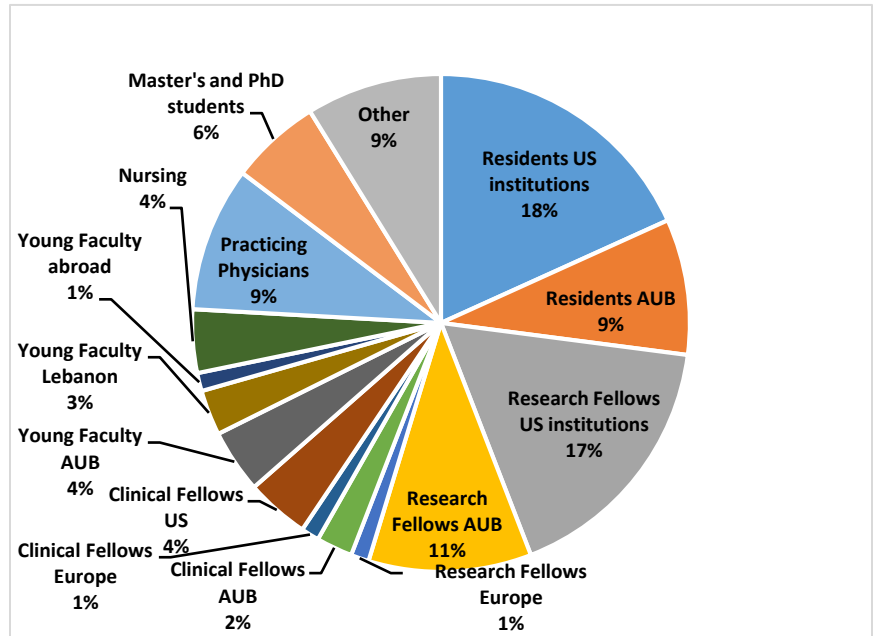


Figure 5: Detailed post training employment of SHARP trainees.

Out of 170 trainees, 49 (29%) are involved in research, 75 (44%) are in clinical positions, 15 (9%) are in teaching positions, and 31 (18%) are in other positions including: pharmacists, dietitians, students, and administrative positions (Figures 4, 5).

**d.Scientific Contributions and Achievements Post SHARP over the Last 8 Years.**

Our graduates' achievements and scientific contributions post-SHARP include receiving national and international awards, presenting at scientific meetings, receiving advanced academic degrees, and publishing manuscripts in high tier peer-reviewed journals.

**Table 1: Summary of Achievements:** the below data may be an underestimate of trainees' output as not all trainees have provided updates as requested.

Type	Total Number
Awards	34 awards
Posters at scientific meetings	27 posters
Post-training education	21 post-training degrees
Published Manuscripts	848 (33% had SHARP trainees as first authors)

**1. National and International Awards**

34 national and international awards:

- Outstanding Research Award-Johns Hopkins Emergency Medicine Program
- Chaz N. Schoenfeld Scholars Award-Johns Hopkins University
- Outstanding Resident Award-Johns Hopkins Emergency Medicine Program
- Research award-Oncology Nursing Society (ONS) Foundation

- Best Proposal Award-Faculty Advancement Program at the American University of Beirut
- Phoebe Leboy Professional Development Award-ASBMR
- Outstanding Poster Presentation Award - 7th Annual AUB Biomedical Research Day, American University of Beirut
- Diana Tamari Sabbagh Continuing Education Travel Award-American University of Beirut
- Endocrine Society Young Investigator Award-Endocrine Society
- Best Poster Presentation Award-Fifth Africa and Middle East Congress on Addiction
- Best Poster Presentation Award-American University of Beirut
- Young Psychiatrists Fellowship Program Award-Australian Federation of Psychiatric Associations
- Best Poster Presentation Award-Lebanese Research Forum
- New Investigator Scholarship-NIAID/IDSA Research Career Meeting
- New Investigator Award-Conference on Retroviruses and Opportunistic Infections (CROI)
- Young Investigator Award-ID Week Program Committee
- 2 AOA Member-Alpha Omega Alpha Honor Medical Society
- Highest Junior Resident Absite Score Award-UMMC General Surgery
- Junior resident teaching award-UMMC General Surgery
- Intern of the year award-UMMC General Surgery
- Second Best Poster presentation-Mercy Hospital Research Day
- Second prize in the category of oral presentations-6th Annual Meeting of the American College of Endocrinology -Gulf Chapter
- US Ten day Cardiovascular Epidemiology Seminar-American Heart Association's Council on Cardiovascular Epidemiology and Prevention
- Sponsored participation in the "US Ten day Cardiovascular Epidemiology Seminar"-American Heart Association's Council on Cardiovascular Epidemiology and Prevention
- Best Paper Sessions Feature-Nass 2017-Daily News website
- Top 8 paper sessions-American Society for Metabolic and Bariatric Surgery (ASMBS)
- L.E.A.D International Award-American Society for Metabolic and Bariatric Surgery (ASMBS)
- MGH Postdoc Recognition Award-Mass General Postdoc Association (MGPA)
- Best Clinical Research Poster Presentation-AUB Annual Biomedical Research Day
- MPP Grant-American University of Beirut
- Knowledge is Power-American University of Beirut
- First prize for oral presentation-Fifth Annual Clinical Research Open House
- Resident/Fellow oral presenter in the ACP 2020 Virtual Presentations for winning abstracts  
27 posters presented at scientific meetings:
- International Congress of Nurses 2019
- 6th Annual AUB Biomedical Research Day
- American Society of Parenteral and Enteral Nutrition annual conference
- Biomedical Research Day
- ASBMR 2019
- American Society of Radiation Oncology (ASTRO) Annual meeting
- The Annual Meeting of the American Society of Bone and Mineral Research
- International Anesthesia Research Society (IARS) 2018 Annual Meeting and International Science Symposium.
- American College of Cardiology
- ID Week, San Diego
- APHA Annual Meeting and Exposition
- American Society of Parenteral and Enteral Nutrition annual conference
- American Society of Parenteral and Enteral Nutrition annual conference
- ASBMS Obesity Week 2014
- American College of Gastroenterology 2018 Annual meeting
- American Society of Parenteral and Enteral Nutrition annual conference

- ISSHP World Congress
- AUB Annual Biomedical Research Day
- American Society of Hematology
- ASBMR 2019
- 19th EFORT Congress

## 2. 21 Post-training Degrees

Several graduates from the SHARP Summer Program have completed MSc degrees or PhD degrees based on the foundations of the SHARP Summer certificate at prestigious institutions. The students' SHARP Summer coursework was provided equivalence during their MSc and PhD degrees. These are summarized below:

- *Completed Degrees*
  - 17 Master's degrees (excluding the SHARP MSc degree). Institutions include: Johns Hopkins University, Imperial College of Science Technology and Medicine, University of Adelaide, University of Toledo, London School of Hygiene and Tropical Medicine, University of Paris, Lebanese University, and the American University of Beirut.
  - 4 PhDs: University of Michigan, University of Colorado Denver, German Cancer Research Center, and the American University of Beirut
- *Degrees in Progress*
  - 2 MPH in progress
  - 1 PhD in Epidemiology at Utrecht University.

## 3. Research Productivity during and Post-training

SHARP graduates have published to date a total of 848 publications. In 286 (34%) of these publications, SHARP graduates are first authors.

These publications focus on NCDs are as follows:

1. Cancer: 140 (16%)
2. CVDs: 143 (17%)
3. Lifestyle, environmental and genetic determinants of Metabolic disorders: 79 (10%)
4. Neurodegenerative disorders: 27 (3%)
5. Environmental health: 19 (2%)
6. Epidemiologic Methods 49 (6%)
7. Orthopedics: 42 (5%)
8. Other: 349 (41%)

In terms of comparison of trainees' output to NIH FIC published metrics, SHARP trainees published an average of 4.96 publications per trainee as compared to the FIC average of 1.98 per trainee.

**Table 2: Number of Publications per Trainee: Grantee to Tenant Comparison**

	Number of Articles	Number of Trainees	Articles per Trainee
<b>FIC</b>	22615	11438	1.98
<b>D43TW9118</b>	848	170	4.98

The top journals in which SHARP graduates have published are:

- The Cochrane database of systematic reviews- Impact Factor: 6.754 (19 publications)
- Plastic and reconstructive surgery-Impact Factor: 2.993 (16 publications)
- Journal of vascular surgery-Impact Factor: 3.770 (14 publications)
- Journal of clinical epidemiology-Impact Factor: 4.245 (13 publications)

- Obesity surgery-Impact Factor: 3.346 (12 publications)
- The Journal of craniofacial surgery-Impact Factor: 0.772 (12 publications)
- The Journal of thoracic and cardiovascular surgery-Impact Factor: 4.880 (12 publications)
- Frontiers in oncology-Impact Factor: 4.137 (11 publications)
- Metabolism: clinical and experimental-Impact Factor: 5.963 (11 publications)
- The journal of trauma and acute care surgery-Impact Factor: 3.403 (11 publications)
- Journal of voice : official journal of the Voice Foundation-Impact Factor: 1.19 (10 publications)
- Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery-Impact Factor: 4.496 (10 publications)
- The Journal of surgical research-Impact Factor: 2.187 (10 publications)
- Gastrointestinal endoscopy-Impact Factor: 5.369 (9 publications)
- The Cleft palate-craniofacial journal : official publication of the American Cleft Palate-Craniofacial Association-Impact Factor: 1.238 (9 publications)
- Methods in molecular biology (Clifton, N.J.)-Impact Factor: 0.38 (8 publications)
- Annals of surgery-Impact Factor: 9.203 (7 publications)
- BMJ case reports-Impact Factor: 27.604 (7 publications)
- Journal of vascular surgery. Venous and lymphatic disorders-Impact Factor: 1.619 (7 publications)
- PloS one-Impact Factor: 2.776 (7 publications)

## 2. SHARP MSc Program

### d. Program Outreach

The MSc Program trainees are Scholars who decide to enroll in the long-term training option of SHARP after the completion of the 12 credit SHARP summer certificate.

A total of 22 applications were submitted to the Program, and 16 were accepted over the past 7 years, and one MSc candidate completed all core courses in the MSc curriculum but not the MSc thesis, having left for clinical training.

### i. Nationalities and Gender Distribution

SHARP MSc trainees are mostly Lebanese, 69% are females.

### ii. Research Productivity and Scientific Contributions

To date, the Program has graduated 9 MSc trainees and 7 more are in progress.

The 7 MSc graduate thesis projects are detailed below:

**Marlene Chakhtoura, MD-MSc 2015 graduate**-Assistant Professor of Clinical Medicine, Internal Medicine, American University of Beirut

Thesis project: Optimal dose of vitamin D replacement: a systematic review and meta-analysis of randomized controlled trials from the Middle East and North Africa

**Maya Barake, MD- MSc 2016 graduate**-Endocrinologist-Clemenceau Medical Center and Bellevue Medical Center

Thesis project: Effects of growth hormone therapy on bone in adults with osteopenia or osteoporosis and without growth hormone deficiency: a systematic review and meta-analysis

**Karine El Feghali, MD-MSc 2016 graduate**-Clinical Research Fellow-Radiation Oncology-MD Anderson Cancer Center, University of Texas MD Anderson Cancer Center

Thesis project: Prophylactic cranial irradiation in patients with non-small-cell lung cancer: a systematic review and meta-analysis of randomized controlled trials

**Elias Ghossoub, MD-MSc 2017 graduate**-Assistant Professor of Clinical Specialty-Psychiatry- American University of Beirut

Thesis project: Impact of substance use disorders on self- and other-directed violence an integrated model approach

**Eman Sbaity, MD-MSc 2018 graduate**-Instructor of Clinical Surgery- American University of Beirut

Thesis project: Effect of Young Age (below 40 years) on Oncologic Outcomes in Lebanese Patients with Breast Cancer Presenting to AUBMC: A Matched Cohort Study

**Nancy Nakhoul, MD-MSc 2018 graduate**-Endocrinologist-Kesserwan Medical Center

Thesis project: Metabolically Healthy and Unhealthy Obese in the Lebanese Population, Are They Different? The role of nontraditional risk factors

**Dayane Daou, MD-MSc 2019 graduate**-Medical Scientific Liaison-Neuroscience, Novartis Lebanon

Thesis project: The effect of professional lactation support on the rates of breastfeeding in Lebanese women

**Mohammad Nasser, MD-MSc 2020 graduate**- International Training Medical Fellow-Wrightington Wigan and Leigh NHS Trust

Thesis project: The Use of Injury Severity Score (ISS) to Assess The Economic Burden of Trauma at a Tertiary Care Center in Beirut, Lebanon

**Sanaa Badour, MD-MSc 2020 graduate**-PGY III, Internal Medicine- American University of Beirut

Thesis project: Preoperative and Intraoperative Determinants of Pulmonary Complications after Cardiac Surgery: Focusing on Intraoperative Transfusion and Time On Pump-Implications on Short and Long-Term Outcomes

In addition, the below tables summarize some of the research projects conducted by the SHARP MSc trainees and conference presentations made while completing their SHAPR training.



**Table 3: Research Conducted By Trainees under This D43 Award.**

Trainee	Mentor	Planned or Published Research Conducted under this Award
Aya Bassatne MSc Trainee	Ghada El-Hajj Fuleihan PD	<p><b>Publications:</b></p> <p><b>(1) Disease burden of osteoporosis and other non-communicable diseases in Lebanon.</b> Bassatne A, Harb H, Jaafar B, Romanos J, Ammar W, El-Hajj Fuleihan G. [published online ahead of print, 2020 May 6]. Osteoporos Int. 2020;10.1007/s00198-020-05433-w. doi:10.1007/s00198-020-05433-w</p> <p><b>(2) Vitamin D supplementation in obesity and during weight loss: A review of randomized controlled trials.</b> Bassatne A*, Chakhtoura M*, Saad R, El Hajj Fuleihan G. Metabolism, Volume 92, 2019, Pages 193-205, ISSN 0026-0495, <a href="https://doi.org/10.1016/j.metabol.2018.12.010">https://doi.org/10.1016/j.metabol.2018.12.010</a>. (*Co-primary authors)</p> <p><b>Ongoing Projects:</b></p> <p><b>(1) Delta Like 1 (DLK1) Is A Possible Mediator Of Vitamin D Effects On Bone And Energy Metabolism</b> Role (First author): study design and conduct, data collection, data analysis and interpretation, manuscript write-up</p> <p><b>(2) Effect Of Vitamin D Supplementation On Hip Structural Geometry In The Elderly</b> Role (First author): study design and conduct, data collection, data analysis and interpretation, manuscript write-up</p> <p><b>(3) Prevention And Treatment Of Aromatase Inhibitor Induced Bone Loss In Women With Breast Cancer: A systematic review and Meta-analysis</b> Role (Secondary author): screening titles, abstracts and full texts, data abstraction, data analysis, manuscript write-up</p> <p><b>(4) Prevention And Treatment Of Aromatase Inhibitor Induced Bone Loss In Women With Breast Cancer: A critical Appraisal of guidelines</b> Role (First author): screening titles, abstracts and full texts, data abstraction, data analysis, manuscript write-up</p> <p><b>(5) Patients' preferences and values regarding treatment of hypercalcemia of malignancy: A systematic Review</b> Role (First author): screening titles, abstracts and full texts, data abstraction, data analysis, manuscript write-up</p> <p><b>(6) The Link between Coronaviruses and Vitamin D: An Extensive and Rigorous Systematic Review</b> Role (First author): screening titles, abstracts and full texts, data abstraction, data analysis, manuscript write-up</p> <p><b>(7) The impact of vitamin D supplementation on fractures: an umbrella review of systematic reviews and meta-analyses of randomized controlled trials.</b> Role (Author): screening full texts, data abstraction, quality assessment</p>

Trainee	Mentor	Planned or Published Research Conducted under this Award
Dayane Daou MSc Trainee Joined Pharma	Mona Nabulsi  EC	<p><b>(1) MSc Thesis Manuscript: The Effect Of Lactation Consultants On Exclusive Breastfeeding Rates In A Cohort Of Lebanese Women, A Secondary Data Analysis Using Mixed Methods Technique</b> (Leading role; Submitted, Mentor: Dr Mona Nabulsi)</p> <p><b>(2) The Effect of Intraoperative Dexmedetomidine Versus Morphine on Postoperative Morphine Requirements After Laparoscopic Bariatric Surgery.</b> Zeeni C, Aouad MT, Daou D, Naji S, Jabbour-Khoury S, Alami RS, Safadi BY, Siddik-Sayyid SM. <i>Obes Surg.</i> 2019 Jul 8. (Leading role)</p> <p><b>(3) Examining Burnout, Depression, and Attitudes Regarding Drug Use Among Lebanese Medical Students During the 4 Years of Medical School.</b> Talih F1, Daher M2, Daou D3, Ajaltouni J2</p> <p><b>(4) Feedback Among Medical Students: Mixed Methods Analysis;</b> (Mentor: Dr. Zgheib)</p> <p><b>(5) Write Up Of A Systematic Review On Hypertension Prevalence, Awareness Treatment And Control In The Arab World</b> (Mentor: Dr. Sibai)</p> <p><b>(6) RCT On TBL Versus Small Group Discussions In Teaching EBM</b> along with Dr Nabulsi: currently in the manuscript writing phase</p>
Elias Ghossoub  MSc Graduate SHARP Faculty	Ziad Nahas  PD/Thesis committee member	<p><b>(1) Comparative Efficacy And Safety Of Carbamazepine In Adults Without Severe Mental Illness, With Aggressive And Violent Interpersonal Behavior: A Systematic Review And Meta-Analysis.</b> Ghossoub E, Noufi P, Ghosn O, Khoury R, Talih F, Akl EA. <i>Aggression &amp; Violent Behavior.</i> 2018 Jan-Feb. 38:86-93. DOI: 10.1016/j.avb.2017.12.005. (involved in the conception, study design, data collection and analysis and writing of the manuscript).</p> <p><b>(2) Prevalence And Correlates Of Criminal Behavior Among The Noninstitutionalized Elderly: Results From The National Survey On Drug Use And Health.</b> Ghossoub E, Khoury R. <i>Journal of Geriatric Psychiatry and Neurology.</i> 2018. 31(4):211-222. (involved in the conception, study design, data collection and analysis and writing of the manuscript)</p> <p><b>(3) Association Between Substance Use Disorders And Self- And Other-Directed Aggression: An Integrated Model Approach.</b> Ghossoub E, Adib S, Fuleihan GE, Maalouf FT, Tamim H, Nahas Z. <i>Aggressive Behavior,</i> Aug 16, 2019 (was involved in the conception, study design, data collection and analysis and writing of the manuscript).</p> <p><b>(4) COVID-19 and the Duty to Protect From Communicable Diseases.</b> Ghossoub E, Newman W J. <i>J Am Acad Psychiatry Law.</i> 2020 Jun;48(2):155-160. (was involved in the conception, and writing of the manuscript).</p>

Trainee	Mentor	Planned or Published Research Conducted under this Award
<p>Eman Sbaity</p> <p><b>MSc Graduate Joined AUB</b></p>	<p>Ali Shamseddine</p> <p><b>PD is Thesis Co-mentor</b></p>	<p><b>(1) A New Index For Pre-Operative Cardiovascular Evaluation.</b> Dakik HA, Chehab O, Eldirani M, Sbeity E, Karam C, Abou Hassan O, Msheik M, Hassan H, Msheik A, Kaspar C, Makki M, Tamim H. J Am Coll Cardiol. 2019 Jun 25; 73 (24):3067-3078</p> <p><b>(2) Mental Health Research In The Arab Region: Challenges And Call For Action.</b> Maalouf FT, Alamiri B, Atweh S, Becker AE, Cheour M, Darwish H, Ghandour LA, Ghuloum S, Hamze M, Karam E, Khoury B, Khoury SJ, Mokdad A, Meho LI, Okasha T, Reed GM, Sbaity E, Zeinoun P, Akl EA. Lancet Psychiatry. 2019 Nov;6(11):961-966</p> <p><b>(3) Association Of Mri T2 Signal Intensity With Desmoid Tumor Progression During Active Observation: A Retrospective Cohort Study.</b> Cassidy MR, Lefkowitz RA, Long N, Qin LX, Kirane A, Sbaity E, Hameed M, Coit DG, Brennan MF, Singer S, Crago AM. Annals Of Surgery. 2018</p> <p><b>(4) Diagnostic Accuracy Of Sentinel Node Identification Is Maintained With The Addition Of Local Lidocaine And Subareolar Radioactive Colloid Injection.</b> Stearns V, Blackford A, Kessler J, Sbaity E, Habibi M, Khouri N, Lee CS, May E, Jeter S, Sahebi C, Shehata C, Tarpinian K, Jacobs L, Eisner D Breast Cancer Research And Treatment. 2015, vol.150, no.3, pp-589-95</p> <p><b>(5) Controversial Indications For Sentinel Lymph Node Biopsy In Breast Cancer Patients.</b> Assi H, Sbaity E, Abdelsalam M, Shamseddine A Biomed Research International. 2015, vol.2015, pp-405949</p> <p><b>(6) Treatment Of Contralateral Axillary Metastases: Palliative Vs Curative Dilemma.</b> Dayyat A, Sbaity E, Mula-Hussein L, Youssef B, Kaouk I, Amin Hassan A, Halahleh K, Giovannoni S, Ahmed Mohamed T, Youssef Mohamed W, El-Tamer M, Abbas A, Geara F, Abou-Alfa Gk, El-Saghir NS. Annals Of Hematology &amp; Oncology. 2014, vol.1, no.2</p> <p><b>(7) Perception Of Physicians About Women Surgeons: A Qualitative Study.</b> (in press)</p> <p><b>(8) Intracystic Papillary Carcinoma: Clinical Presentation, Patterns Of Practice, And Oncological Outcomes.</b> (under review)</p> <p><b>Ongoing Projects as PI</b></p> <p><b>(1)</b> Frameworks for networking and collaboration in the Arab region: a systematic review. <b>(2)</b> Epidemiology, Management and Outcome of Soft Tissue Sarcomas at AUBMC. <b>(3)</b> Breast Cancer Patients Receiving Neoadjuvant Chemotherapy Followed By Axillary Lymph Node Dissection: Amount Of Residual Disease In The Young Population As Compared To The Older Breast Cancer Patients: Matched Retrospective Cohort. <b>(4)</b>The Impact of Diabetes Mellitus on Oncologic Outcomes of Colorectal Cancer: A Scoping Review. <b>(5)</b> Effect of Young Age (below 40 years) on Oncologic Outcomes in Lebanese Patients with Breast Cancer Presenting to AUBMC: a Matched Cohort Study. <b>(6)</b> Gastrointestinal Stromal Tumors database: Retrospective Profile Description and Evaluation of Surgery Practices and Outcomes. <b>(7)</b> Sentinel Lymph Node Biopsy After Neoadjuvant Chemotherapy for Initially Node Positive Breast Cancer: A Systematic Review and Meta-Analysis. <b>(8)</b> AfME Registry On Gastrointestinal Stromal Tumors- A Retrospective Intergroup Profile Description And Evaluation Of The Use Of TKIs (Co-I).</p>
<p>Hussein Taleb</p> <p><b>MSc Trainee</b></p>	<p>Ali Bazarbachi</p> <p><b>SHARP Faculty</b></p>	<p>Scoping review: topic: Hypertension awareness, treatment and control in the Arab world. Contributed in: search strategy, title and abstract screening, full text screening, and manuscript writing</p>

Trainee	Mentor	Planned or Published Research Conducted under this Award
<p>Marlene Chakhtoura</p> <p><b>MSc Graduate</b> <b>Joined AUB SHARP Faculty</b></p>	<p>Ghada El-Hajj Fuleihan</p> <p><b>PD</b></p>	<p><b>(1) Serum 25-Hydroxyvitamin D Levels: Variability, Knowledge Gaps, and the Concept of a Desirable Range.</b> El-Hajj Fuleihan G, Bouillon R, Clarke B, Chakhtoura M, Cooper C, McClung M, Singh R, Journal of Bone and Mineral Research, 2015;30(7):1119-33</p> <p><b>(2) Hypovitaminosis D in Bariatric Surgery: A Systematic Review of Observational Studies.</b> Chakhtoura M, Nakhoul N, Shawwa K, Mantzoros C, El Hajj Fuleihan G. Metabolism 2015, pii: S0026-0495(15)00369-8</p> <p><b>(3) Guidelines On Vitamin D Replacement In Bariatric Surgery: Identification And Systematic Appraisal.</b> Chakhtoura M, Nakhoul N, Akl EA, Mantzoros C, El Hajj Fuleihan G. Metabolism 2016, pii: S0026-0495(15)00384-4</p> <p><b>(4) The FRAX-Based Lebanese Osteoporosis Treatment Guidelines: Rationale for a Hybrid Model.</b> Chakhtoura M, Leslie WD, McClung M, Cheung AM, El-Hajj Fuleihan G. Osteoporos Int. 2017;28(1):127-137</p> <p><b>(5) Impact Of Vitamin D Replacement In Adults And Elderly In The Middle East And North Africa: A Systematic Review And Meta-Analysis Of Randomized Controlled Trials.</b> Chakhtoura M, Akl EA, El Ghandour S, Shawwa K, Arabi A, Mahfoud Z, Habib RH, Hoballah H, El Hajj Fuleihan G. Osteoporos Int. 2017 Jan;28(1):35-46</p> <p><b>(6) Vitamin D Replacement In Children, Adolescents And Pregnant Women In The Middle East And North Africa: A Systematic Review And Meta-Analysis Of Randomized Controlled Trials.</b> Chakhtoura M, El Ghandour S, Akl EA, Shawwa K, Arabi A, Mahfoud Z, Habib RH, Hoballah H, El Hajj Fuleihan G. Metabolism Clinical and Experimental 70 (2017) 160 – 176.</p> <p><b>(7) Hyperphosphatemic Familial Tumoral Calcinosis: Case Report and Review of Literature.</b> Chakhtoura M, Ramnitz MS, Khoury N, Nemer G, Shabb N, Abchee A, Berberi A, Hourani M, Collins M, Ichikawa S, El Hajj Fuleihan G. Osteoporos Int 2018;29(9):1987-2009.</p> <p><b>(8) Commentary: Myths and facts on vitamin D amidst the COVID-19 pandemic.</b> Chakhtoura M, Napoli N, El Hajj Fuleihan G. Metabolism Clinical and Experimental, 109, 154276, August 01, 2020.</p>
<p>May Mohamad</p> <p><b>MSc Trainee</b></p>	<p>Antoine Abu Musa</p> <p><b>PD/ Thesis Committee member</b></p>	<p><b>(1) Hypertension Indicators in the Arab World- Scoping Review:</b> Idea translation, Methodology including intensive meetings with the Librarian for a comprehensive search strategy, eligibility criteria, Data collection and abstraction, Analysis, and Write Up</p> <p><b>(2) Effect of Combined Oral Contraceptive Pills on the Risk of Cardiovascular Diseases in Premenopausal Females with Endometriosis- Systematic Review &amp; Meta-Analysis:</b> Idea generation, proposal writing, extensive meetings with the medical librarian for a search strategy generation, title and abstract screening, full text screening, data abstraction</p> <p><b>(3) DOCPREL Trial-Protocol: Effect of Combined Oral Contraceptive Pills on the Risk of Cardiovascular Diseases in Premenopausal Females with Endometriosis- Systematic Review &amp; Meta-Analysis:</b> Idea generation, Literature review, Proposal writing, Sample size calculation, Methodology</p> <p><b>(4) Qualitative And Quantitative Radiological Analysis Of Non-Contrast CT Is A Strong Indicator In Patients With Acute Pyelonephritis-</b> American Journal of Emergency Medicine, co-first author. Fadi El-Merhi, May Mohamad, Ali Haydar et al.</p> <p><b>(5) Augmented Quadruple Phase Contrast Media Administration And Tri-Phasic Scan Protocol Increase Image Quality At Reduced Radiation Dose During Computed Tomography Urography-</b> Journal of Computer Assisted Tomography</p>

Trainee	Mentor	Planned or Published Research Conducted under this Award
<p>Maya Barake MSc Graduate  Faculty at AUB affiliate</p>	<p>Asma Arabi  SHARP Faculty  PD/ Thesis Committee member</p>	<p><b>(1) Effects of Recombinant Human Growth Hormone Therapy on BMD in Adults with Growth Hormone Deficiency: A Meta-analysis.</b> Barake M, Klibanski A, Tritos NA. J Clin Endocrinol Metab. 2014 Mar; 99(3): 852-60</p> <p><b>(2) Investigation Of Impulsivity In Patients On Dopamine Agonist Therapy For Hyperprolactinemia: A Pilot Study.</b> Barake M, Evins AE, Stoeckel L, Pachas GN, Nachtigall LB, Miller KK, Biller BM, Tritos NA, Klibanski A. Pituitary 2014 April; 17(2): 150-6</p> <p><b>(3) The Effect of Somatostatin Analogs on Vitamin D and Calcium Concentrations in Patients with Acromegaly.</b> Ajmal A, Haghshenas A, Attarian S, Barake M, Tritos NA, Klibanski A, Miller KK, Nachtigall LB. Pituitary 2014 Aug; 17(4): 366-73</p> <p><b>(4) Evaluation And Management Of Thyrotropin-Secreting Pituitary Adenomas.</b> Barake M, Tritos NA. Int J Endo Oncol 2014 1(2): 163-171</p> <p><b>(5) Effects Of Growth Hormone Therapy On Bone Density And Fracture Risk In Age-Related Osteoporosis In The Absence Of Growth Hormone Deficiency: A Systematic Review And Meta-Analysis.</b> Barake M, Arabi A, Nakhoul N, El Hajj Fuleihan, El Ghandour S, Klibanski A, Tritos NA. Endocrine 2018 59(1): 39-49</p> <p><b>(6) Impulse Control Disorders In Patients With Hyperprolactinemia Treated With Dopamine Agonists: How Much Should We Worry?</b> Barake, M, Klibanski A, Tritos NA. Eur J Endocrinol 2018 179(6): 287-296</p> <p><b>(7) Osteoporosis in the Arab Region: a scoping review (work in progress)</b></p>

Trainee	Mentor	Planned or Published Research Conducted under this Award
<p>Maya Basbous MSc Trainee</p>	<p>Raya Saab SHARP Faculty</p>	<p><b>(1) Constitutional Mismatch Repair Deficiency (Case Series)</b> Data Collection, Manuscript Draft</p> <p><b>(2) Targeted Education For General Practitioners With Development And Application Of A Workflow For Rapid Second Opinion To Promote Early Diagnosis And Referral Of Children With Suspected Solid Tumors</b> Study conduct, data collection, data analysis and interpretation, manuscript draft, revision and accepting final version of manuscript</p> <p><b>(3) Pediatric Tumor Tissue Banking for Scientific Research</b> Study coordinator, consenting process, tissue collection, data collection, data entry, continuing review reports submission</p> <p><b>(4) Establishing A Research Data Registry For Pediatric Cancer Patients At The Children's Cancer Center Of Lebanon</b> Study coordinator, consenting process, data collection, data entry, continuing review reports</p> <p><b>(5) Identification Of Novel Gene Mutations In Families With Multiple Members With Cancer</b> Study coordinator, consenting process, tissue collection, data collection, data entry, continuing review reports</p> <p><b>(6) Familial Investigations Of Childhood Cancer Predisposition (SJFAMILY)</b> Study coordinator, consenting process, tissue collection, data collection, data entry, continuing review reports</p> <p><b>(7) Infectious Disease Outcome in Pediatric Oncology Patients</b> Study coordinator, consenting process, data collection, data entry, continuing review reports</p> <p><b>(8) Establishing the Middle East Research Network for Inherited Bone Marrow Failure Syndromes</b> Study coordinator, consenting process, tissue collection, data collection, data entry, continuing review reports</p> <p><b>(9) Investigating The Biologic And Genetic Characteristics Of Neuroblastoma In Patients Treated At The Children's Cancer Center</b> Data collection, honest broker, manuscript draft</p> <p><b>(10) Evaluation Of The Expression Of CD147 And Integrin-B1 In Pediatric Soft Tissue Sarcomas, And Their Association With Patient Characteristics And Outcome.</b> Data collection, honest broker, manuscript draft</p> <p><b>(11) Childhood cancer care in the Middle East, North Africa, and West/Central Asia: A snapshot across five countries from the POEM network.</b> Basbous M, Al-Jadiry M, Belgaumi A, Sultan I, Al-Haddad A, Jeha S, Saab R. Cancer Epidemiol . 2020 Jun 2;101727.</p>

Trainee	Mentor	Planned or Published Research Conducted under this Award
Dima Kabbani MSc Trainee	Carlos Cervera	<p><b>(1) When Medicine Transforms Art.</b> Belga S, MacDonald C, Kabbani D, Roelofs K, Hussain MW, Cervera C. <i>Transpl Infect Dis.</i> 2019 Aug;21(4):e13130. doi: 10.1111/tid.13130. Epub 2019 Jul 2. 2</p> <p><b>(2) High Incidence Of Clinically Significant Cytomegalovirus Infection In CMV D+/R+ Lung Transplant Recipients Receiving 3 Months Of Antiviral Prophylaxis.</b> Kabbani D, Hirji A, Hernandez C, Malhi H, Mabilangan C, Chandrarathne S, Halloran K, Weinkauff J, Kapasi A, Lien D, Preiksaitis J, Cervera C. <i>Transpl Infect Dis.</i> 2019 Aug;21(4):e13094</p> <p><b>(3) The Direct And Indirect Effects Of Vancomycin-Resistant Enterococci Colonization In Liver Transplant Candidates And Recipients.</b> Belga S, Chiang D, Kabbani D, Abraldes JG, Cervera C. <i>Expert Rev Anti Infect Ther.</i> 2019 May;17(5):363-373</p> <p><b>(4) A Multicenter Case-control Study of the Effect of Acute Rejection and Cytomegalovirus Infection on Pneumocystis Pneumonia in Solid Organ Transplant Recipients.</b> Hosseini-Moghaddam SM, Shokoohi M, Singh G, Dufresne SF, Boucher A, Jevnikar A, Prasad GVR, Shoker A, Kabbani D, Hebert MJ, Cardinal H, Houde I, Humar A, Kumar D. <i>Clin Infect Dis.</i> 2019 Apr 8;68(8):1320-1326</p> <p><b>(5) The Impact Of Granuloma In Explanted Lungs On Post- Lung Transplant Mycobacterial Infection/ Paper Under Review/Contribution 1st Author</b></p> <p><b>(6) Infectious Complications Post Islet Transplant</b> (Ongoing project; Role as PI)</p>

**Table 4: Conference Presentations done by MSc trainees during their SHARP training**

Trainee	Conference Presentations
Aya Bassatne MSc trainee	<p><b>(1)</b> Disease Burden of Osteoporosis and Other NCDs in Lebanon, at the American Society of Bone and Mineral Research (ASBMR) Annual Meeting (Sep 2019, Orlando, FL, USA)</p> <p><b>(2)</b> Delta Like 1 (DLK1) is a possible mediator of vitamin D effects on bone and energy metabolism, at the ASBMR Annual Meeting (Sep 2019, Orlando, FL, USA)</p>
Dayane Daou Joined Pharma	<p><b>(1)</b> Presentations on how to conduct research at KMC hospital (intradepartmental, anesthesia)</p> <p><b>(2)</b> Participated in teaching activities (EBM course instructor at AUB for Med 2 students)</p>
Eman Sbaity SHARP Faculty	<p><b>(1)</b> Panelist at Beirut Breast Cancer Conference 3rd, Feb 2015, Beirut, Lebanon</p> <p><b>(2)</b> Panelist at "Multidisciplinary Management of breast cancer : Tumor Boards cases" Beirut Breast Cancer Conference 4th, Feb 2016, Beirut, Lebanon</p> <p><b>(3)</b> Panelist at "Multidisciplinary Management of breast cancer: Tumor Boards cases" Evolving definition of breast margins, ACOD 20th conference, 2017</p> <p><b>(4)</b> General Surgery Review Course, Annual Jordanian Surgery Conference, 2016- 2017 women in surgery, Annual Jordanian Surgery Conference, 2016</p> <p><b>(5)</b> Research collaboration models and frameworks, Middle East Medical Assembly, 2018</p> <p><b>(6)</b> Nipple Sparing Mastectomy, King Hussein Cancer Center Annual Surgery Symposium, 2016</p> <p><b>(7)</b> Sentinel Lymph Node Biopsy following Neoadjuvant Chemotherapy, Alexandria Clinical Oncology Department Annual Symposium, 2016</p> <p><b>(8)</b> Indications to Sentinel Lymph Node Biopsy" as part of Sentinel Lymph Node Biopsy for Breast Cancer Workshop, Middle East Medical Assembly (MEMA), 2015</p> <p><b>(9)</b> Perception of Physicians about Women Surgeons; Knowledge is Power (KIP) 2017</p> <p><b>(10)</b> Surgery for Liver Metastasis from Gastric cancer: ARE WE READY? ABC oncology Educational course 2017 on Gastric Cancer, 2017.</p> <p><b>(11)</b> Breast Cancer and Colon Cancer; Lecture for Public, 2016, 2017</p>

Trainee	Conference Presentations
<p>Marlene Chakhtoura <b>SHARP Faculty</b></p>	<p><b>American University of Beirut</b>  <b>(1)</b> 2016 OBGYN Core Curriculum “Diagnosis and Management of Post-Menopausal Osteoporosis”  <b>(2)</b> 2016 Urology Conference “Bone Health in Prostate Cancer”  <b>(3)</b> 2018 Family Medicine Conference “Medical Weight Management”  <b>(4)</b> 2018 Urology Conference “Bone Health in Men with Hypogonadism”  <b>(5)</b> 2018 Psychiatry Department Conference “Psychiatry and obesity: a collaborative approach”  <b>(6)</b> 2019 OBGYN Core Curriculum “Management of Osteoporosis”</p> <p><b>Lebanon</b>  <b>(1)</b> 2014 The 6th annual meeting of the Lebanese Society for Osteoporosis and Metabolic Bone Disorders (OSTEOS) “Vitamin D Desirable dosing and levels in MENA: Are IOM recommendations applicable?”  <b>(2)</b> 2015 The 7th annual meeting of the Lebanese Society for Osteoporosis and Metabolic Bone Disorders (OSTEOS) “Pathophysiology of osteoporosis in Sickle Cell Disease and Thalassemia”  <b>(3)</b> 2017 The Lebanese Society of Obstetrics and Gynecology meeting 2017 Regional Symposium Beirut “Vitamin D in Pregnancy: an Update”  <b>(4)</b> 2018 “Advances in the management of obesity disease” – Obesity CME activity  <b>(5)</b> 2018 The 7th annual meeting of the Lebanese Society for Osteoporosis and Metabolic Bone Disorders (OSTEOS) “Vitamin D Overview of Evidence from MENA”  <b>(6)</b> 2018 The Lebanese Society of Endocrinology, Diabetes and Lipids “Osteoporosis Treatment Updates”  <b>(7)</b> 2019 The 7th annual meeting of the Lebanese Society for Osteoporosis and Metabolic Bone Disorders (OSTEOS) “The Lebanese Vitamin D Guidelines: A National Framework”  <b>(8)</b> 2019 1ères Journées Francophones de Rhumatologie, Médecine Interne et Immunologie Clinique  <b>(9)</b> 2019 Women’s Health Matters: Tips and steps- Sept 2019  <b>(10)</b> 2019 24th Annual Congress of Saint George Hospital University Medical Center</p>
<p>Maya Barake <b>Faculty AUB affiliated Medical Center</b></p>	<p><b>(1)</b> March 2015 - Updates in Pituitary Diseases. Annual congress of the Lebanese Order of Physicians  <b>(2)</b> May 2015 - Updates in Pituitary Diseases  Monthly meeting, Lebanese Society of Endocrinology, Diabetes &amp; Lipids  <b>(3)</b> Nov 2015 - Parathyroid Disorders in Pregnancy. Annual Congress of the Lebanese Society of Osteoporosis &amp; Metabolic Bone Diseases  <b>(4)</b> Dec 2016 - Growth Hormone Therapy in Adulthood: Effects on bone health &amp; fractures.  Monthly meeting, Lebanese Society of Endocrinology, Diabetes &amp; Lipids  <b>(5)</b> Sep 2017 - Updates in the Medical Treatment of Pituitary Adenomas. First Lebanese Endoscopic Skull Base Surgery Congress  <b>(6)</b> March 2018 - Growth Hormone Therapy &amp; Bone in Adults. Annual Congress of the Lebanese Society of Osteoporosis &amp; Metabolic Bone Diseases  <b>(7)</b> May 2019 – Osteoporosis, To Test or Not To Test, To Treat or Not To Treat, From Theory to Practice. Monthly Orthopedic Meeting, Clemenceau Medical Center  <b>(8)</b> July 2019 – Osteoporosis Management in 2019, From Theory to Practice. Summer meeting, Lebanese Society of Endocrinology, Diabetes &amp; Lipids  <b>(9)</b> October 2019 – Osteoporosis, What do Orthopedic Surgeons Need to Know?  Annual Meeting of the Lebanese Orthopedic Society</p>



Trainee	Conference Presentations
Dima Kabbani MSc trainee	<b>Poster Presentation ID week 2019:</b> <b>(1) Poster 1: Pre-Transplant Vaccination Rates In Solid Organ Transplant Recipients.</b> Authors: Daniel Z. P. Friedman, Sara Belga, Catherine Burton, Jutta Preiksaitis, Dima Kabbani. Session Date: October 4,2019 <b>(2) Poster 2: Incidence Of Myelosuppression Related To Valganciclovir Prophylaxis In Solid Organ Transplant Recipients At High Risk Of CMV Disease.</b> Authors: Sara Belga, Cristina Hernandez, Dima Kabbani, Carlos Cervera. Session Date: October 5, 2019
Sanaa Badour Resident AUB	<b>(1) Effect of intraoperative transfusion on postoperative pulmonary outcomes in CABG: implications on short and long term outcomes-Abstract- ACP 2020 Virtual Presentations</b>

### iii. Other Capacity Building and Research Development Activities

In addition to the core courses that all MSc trainees were required to take, a number of workshops and lectures were offered to add depth and breadth to the Program.

#### 1. Workshops

SHARP MSc trainees attended several workshops hosted by the Clinical research institute during their training including:

- (1) Survival analysis workshop
- (2) Development and Adaptation of Practice Guidelines
- (3) Advanced meta-analysis

#### 2. Major SHARP Lectures

The SHARP MSc Program held several lectures throughout the years of great impact to the trainees and AUB community. These included:

- (1) Assessing Quality of Evidence: The GRADE Approach-Elie Akl, Associate Professor of Medicine at the Department of Internal Medicine, AUB
- (2) How Clinical Practice Recommendation are Developed - Elie Akl, Associate Professor of Medicine at the Department of Internal Medicine, AUB
- (3) Assessing Risk of Bias Associated with Missing Participant Data in Clinical Trials- Elie Akl, Associate Professor of Medicine at the Department of Internal Medicine, AUB
- (4) Combating CV Diseases: The Salt Reduction Path-Hussain Ismaeel, Associate Professor of Clinical Medicine; Internal Medicine, Cardiology, AUB
- (5) Mentoring Tool Kits -Ellen Seely, Director of Clinical Research, Endocrinology, Diabetes and Hypertension Division, Professor, Harvard Medical School
- (6) Transplantation 60 Years Later -Mohamed H. Sayegh, EVP/Dean, Faculty of Medicine, AUB
- (7) Genetic series-Rami Mahfouz, Professor and Director of Clinical Pathology, AUB and Georges Nemer, Professor of Biochemistry and Molecular Genetics, AUB
- (8) Regulation in EAE -Samia Khoury, Associate Dean and Professor, Faculty of Medicine, AUB
- (9) Propensity Scores in Medical Research -Robert Habib, Director of the Society of Thoracic Surgeons Research Center, Chicago
- (10) Analysis of Repeated Measures over Time-John Orav, Associate Professor in the Department of Biostatistics, Harvard Medical School

- (11) Survival Analysis-Ziyad Mahfoud, Associate Professor of Biostatistics and Healthcare Policy and Research, Weill Cornell Medicine-Qatar
- (12) Lung Cancer in 2020: A moving Target-President Fadlo Khuri, AUB
- (13) Research Waste -Mona Nabulsi, Professor of Clinical Specialty. Pediatrics and Adolescent Medicine, AUB
- (14) Creating the Evidence and Dismissing the Myths: A Case Study in Surgical Site Infection Prevention - Kamal Itani, Chief of surgery, A Boston Health Care System
- (15) A global perspective in preventing cardiovascular disease from discovery to policy-Dariusz Mozaffarian, Dean of the Tufts Friedman School of Nutrition Science & Policy, and the Jean Mayer Chair and Professor of Nutrition
- (16) Approaches to fight Non-Communicable Diseases in Lebanon -Walid Ammar, Director General of the Ministry of Public Health, Lebanon

### **3. Enrollment in SHARP courses by non-SHARP students:**

In addition to the SHARP students who register for the SHARP Summer Certificate courses, students from other majors at AUB register for specific Summer Certificate courses. These are detailed below:

- 1 PhD Biomedical Sciences took the SHARP 310 and SHARP 330 courses.
- 5 PhD Epidemiology took the SHARP 315 course.
- 33 PhD Biomedical Sciences took the SHARP 315 course.
- 16 PhD Biomedical Engineering took the SHARP 315 course.
- 3 visiting medical students from Alfaisal University took the SHARP 315 course.
- 1 AUB Medical student graduate audited SHARP 300, SHARP 320, and SHARP 310.
- 1 AUB Medical student graduate audited SHARP 310.

### **D. Scholars Testimonials**

The following are some of the anonymous testimonials from LimeSurveys and emails written by trainees post completion of SHARP:

“Can't thank you enough for the foundation I have received through SHARP.”

“The mock IRB was the most interesting part, it helps a lot while writing future proposal”.

“I am forever grateful for the SHARP experience and knowledge I gained which was very useful to me through my research the past 2 years.”

“I would really like to try and give back to SHARP, I tried thinking about the best way to do that but I am sure you might have better ideas. Maybe help students with their research projects.”

“I leave SHARP as a different person with a different perspective on research. I am proud to have attended this Program and I acknowledge this will be a landmark in my professional research career”

“I had no idea how to read and appraise a scientific paper before SHARP! Gave me an amazing push to a more solid approach”.

“I think the SHARP gave me the essential and necessary basis to start an academic career. All I did before SHARP was bits and pieces. SHARP was the foundation to continue from”.

“I want to place a special emphasis on the LDS and biostatistics part of SHARP since these 2 courses were the gist of the Program. They are the heart and soul of SHARP. This Program superseded my expectations, and I find myself always talking about SHARP and blaming my friends for not taking it”.

“The SHARP Program was a stepping stone into adopting the philosophy of asking the right clinical question and using the right tools to answer it. It empowered me to pursue the career path of an evidence based clinician and a researcher to provide the best patient centered care”.

“SHARP certificate completed my residency and fellowship. Because being a medical doctor is not only about patients, it is also being able to understand the evidence based medicine and being able to criticize it. It is also the beginning of my research oriented career”.

“SHARP helped in many aspects, not only knowledge about research, critical thinking, and evidence based medicine, I learned how to manage my time, how to work hard, and how to coordinate with others during group work”.

“SHARP has helped me build a foundation for my future academic career. SHARP helped gain the confidence I need to start building a well-rounded future. I consider myself lucky to have joined this Program and I am very proud to be part of the SHARP family”.

“I am flat out confident, without SHARP I would not be where I am today. You taught me how to be a scientist. How to feel, understand and manage data. I found myself to be one of few people who understand biostatistics in a department over-flooded with resources and great minds eager to collaborate. I was set up for access, again thanks to SHARP”.

“I did not expect AT ALL that by the end of the Program, I would learn how to perform such complex data analysis! I learned 100x more things that I expected to. Now, I can understand the methodology of virtually all papers that I read. This makes me very happy since my work next year will consist of working on large datasets, and thanks to SHARP, I am very confident in my abilities to come up with an original research question, search the literature for similar existing studies, think of the best study design to answer my research question, plan the study, manage, clean, and analyze the data, and finally report the findings in a manuscript. SHARP taught me how to conduct a research project from A to Z literally. We even spent time discussing the ethical considerations of research (IRB, conflict of interest)! I really feel so much more confident in every aspect of research (critically appraising an article, to conducting a project myself)”.

## **E. SHARP in the News**

SHARP was featured on the main AUB website three times: Once in 2017 for the 5<sup>th</sup> certificate ceremony graduation, once in 2019 for the 7<sup>th</sup> certificate ceremony graduation, and once in 2020 for its 8<sup>th</sup> revamped online certificate program. SHARP was also featured on the AUBMC website and AUB website in a news story covering the SHARP Faculty and trainees’ contribution to Covid-19 research.

It was also featured in AUB’s Main-Gate magazine in its Spring 2014 issue.

In addition, a session given by AUB’s president, Dr. Fadlo Khuri, “Lung Cancer in 2020: A moving Target”, as part of SHARP’s Longitudinal Seminar Series has been featured in AUB’s weekly newsletter.

## **F. PD Invited Lectures**

Dr. Ghada El-Hajj Fuleihan, SHARP Director, was invited to give a presentation sharing SHARP’s success story twice:

**In 2015:** National Institute of Health (NIH) Fogarty International Center (FIC) Advisory Board Meeting. “NCD Research Capacity Building in NCD in the Middle East: The AUB Story (Lebanon)”. Maryland, USA.

**In 2017:** National Institute of Health (NIH) Fogarty International Center (FIC) Advisory Board Meeting. “NCD Research Capacity Building in NCD in the Middle East: The Scholars in HeAlth Research Program (SHARP)”, NIH Campus, Maryland, USA.

**In 2019:** PD was invited to present SHARP at the MENA Conference “Leading Regional Transformation in Training and Research” to be held in Beirut in 2019, postponed to 2020.

## **G. SHARP Rising to Challenges**

In view of extraordinary circumstances of lockdown, travel ban, and in anticipation of a “semi-normalcy” period of at least 3-6 months, SHARP has taken on two major initiatives:

**1. SHARP 2020 web-based certificate program** is an interactive program that was developed in the span of 3 months with the expert help of IT team members at AUB and launched June 15. The SHARP Certificate curriculum was completely revamped into a format suitable for online learning. Students received training on the learning platform and tools pre-SHARP start. This will also provide the basis to develop a SHARP blended certificate, spanning two semesters, to serve the needs of trainees, interested in a flexible schedule, from Lebanon and the region.

**2. SHARP 2020 Research Fellowship Initiative (SHARP RFI)** will launch Aug 2020. Upon graduation, trainees will be given the opportunity to submit a short competitive proposal, to implement a project over 3-6 months, on an NCD topic, and the most deserving will receive a SHARP research fellowship stipend. SHARP is creating a database of committed mentors by discipline, willing to co-sponsor the SHARP RFI stipend, and who can provide trainees with ideas for projects that can be completed over such period, and are publishable. It will provide summer graduates an opportunity to fill an unforeseen career gap, while advancing SHARP’s mission.

### **3. SHARP Faculty and Scholars Lend Their Expertise to Transform Challenges into Opportunities**

With the emergence of the COVID-19 pandemic and in line with its mission to provide superior didactic education complemented with state-of-the-art interactive and practical training in health research, Scholars in HeAlth Research Program (SHARP) students and graduates have been working relentlessly in addressing the immediate and continuing medical challenges that emerged as a result of this pandemic. To better understand this virus and report findings, they have aggressively pivoted their research and aided in improving and advancing the healthcare agenda.

As the COVID-19 pandemic began unfolding, our SHARP scholars mobilized to create a comprehensive response integrating dozens of fields of expertise to complete rapid reviews, articulate guidance, and find solutions in numerous areas. Below are some samples of the already published relevant findings while others are still in process:

Dr. El Hajj Fuleihan, Program Director, and Dr. Chakhtoura, Assistant Summer Director, published a commentary titled “Myths and Facts on Vitamin D Amidst the COVID-19 Pandemic” in Metabolism journal. [https://www.metabolismjournal.com/article/S0026-0495\(20\)30140-2/fulltext?dgcid=raven\\_jbs\\_aip\\_email](https://www.metabolismjournal.com/article/S0026-0495(20)30140-2/fulltext?dgcid=raven_jbs_aip_email)

Drs. Amer Bechnak and Ghina Alaeddine worked on some of the projects spearheaded at the Emory Hope Clinic including a randomized trial of the safety and efficacy of Remdesivir for the treatment of COVID-19 in hospitalized adults (with promising results as by Dr. Fauci), and a dose-ranging study of the safety and immunogenicity of 2019-nCov mRNA vaccine in healthy adults.

Dr. Elias Ghossoub published “COVID-19 and the duty to protect from communicable diseases” in the Journal of the American Academy of Psychiatry and the Law.

Dr. Tamara Lotfi worked on two systematic reviews that were commissioned by the WHO. The first was titled “Physical distancing, face masks, and eye protection to prevent person-person transmission of SARS-CoV2 and COVID-19: A systematic review and meta-analysis”; the second review was titled “Non-invasive and invasive ventilation for patients with COVID-19 and the risk of virus transmission to health care workers from aerosol generating procedures: An urgent systematic review of multiple streams of evidence for the World Health Organization”. She is also currently working on an ongoing Rapid Review titled: “A rapid systematic

review of the clinical factors associated with neurological manifestations in patients infected with SARS-CoV-2".

Dr. Elie Ramly worked on two publications on the effect of the COVID-19 pandemic on plastic and reconstructive surgery and the role of surgeons in the crisis.

Dr. Nour Al Jalbout worked on "Immediate Psychological Impact of SARS-CoV2/ COVID-19 on Emergency Department Healthcare Workers and Staff in a Tertiary Care Center", a social and behavioral study.

Dr. Mohamad El Moheb worked on Gastrointestinal Complications in Critically Ill Patients with COVID-19.

In addition, two current SHARP MSc students, Drs. Aya Bassatne and Maya Basbous are currently working on a rapid review on Covid-19 and Vitamin D along with Dr. Ola El Zein, Head of Saab Medical Library (SML). Dr. Issam Shaarani has three projects in progress: Public Awareness on COVID-19 and its Association with Social Media Use: A Cross-sectional Study from Lebanon; Utilization of Telemedicine by the Lebanese Physicians during Time of Pandemic ; Health Care Seeking Behavior Among People Residing in Lebanon During COVID-19 Quarantine.

Dr. Elie Akl published the article "[Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis](#)" in Lancet.